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A Journal of Management, Engineering and Operation
INCORPORATING
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DIESEL RAILWAY TRACTION

A Supplement illustrating and describing developments in Diesel Railway Traction is presented with every copy of this week's issue. Accompanying this is an index to the Diesel Railway Traction Supplements for the year 1939

DISPATCH OF "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and machinery for such dispatch, and any reader desirous of arranging for copies to be delivered to an agent or correspondent overseas should place the order with us together with the necessary delivery instructions*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas, as they are stopped under the provisions of Statutory Rules and Orders 1939, *No.* 1440

TO CALLERS AND TELEPHONERS

Consequent on the war and the blackout regulations, as an emergency measure to assist our staff in getting home before it is fully dark, our office hours (without a lunch interval) until Saturday, February 10, 1940, *are*:—

Mondays to Fridays - 9 *a.m. till* 3.15 *p.m.*
Saturdays - - - 9 *a.m. till* 1 *p.m.*

Locomotive Builders and Exports

IT was announced during the debate on the Address on December 7 that agreement had been reached between the Ministry of Supply and the British locomotive building industry on the proportions of locomotive producing capacity to be devoted respectively to munitions, to the building of engines for the Expeditionary Force, and to export trade. The Government has informed the commercial attachés abroad that they may now approach our potential customers and say that, if they will place orders with British builders, delivery can be guaranteed. "In this practical way," said Mr. R. S. Hudson, Secretary of the Overseas Trade Department, "we are endeavouring to help our exporters and at the same time get them to direct their exports to the most important markets where we require exchange." This announcement is of the greatest importance to the industry. There is known to be a large potential market overseas for British-built locomotives, especially now that Germany, for so long a powerful competitor, may be considered out of the running. Another point that is not lacking in importance is that the locomotives to be constructed for the Expeditionary Force will be of types that can be used on British railways.

* * * *

German Railway Accidents

In view of the fact that Germany has had a remarkably good record for railway safety until the outbreak of the present war, it is natural that there should be surprise among those who have followed our accounts of German railway developments, particularly in the extension of A.T.C., at the sudden deterioration of the position. It is reported that during the last three months no fewer than 129 persons have lost their lives in seven train accidents, of which at least five are stated to have been collisions. A.T.C. is installed on only two of the lines concerned. The generally first class condition of the equipment on the German State Railway immediately before the war makes it the more difficult to account for this series of accidents, but possible reasons may be the lengthened hours of work recently introduced, and the withdrawal of staff to assist in the rehabilitation of the Polish railways, and their replacement by less experienced persons, if, indeed, it has been possible to replace them at all. Crowded trains may of course convert what otherwise might be but a slight mishap into one serious enough to claim great publicity. One difficulty of German railway administration which had been growing latterly was the preferential promotion of members of the Nazi party, a practice unlikely to contribute to efficiency, especially at a time like the present when normal routine is liable to be disturbed.

* * * *

Speed *and* Safety

It is significant that the general increase that has taken place in late years in average train speeds and train loading on the railways of the U.S.A. has not been accompanied by any corresponding increase in the number of accidents to employees. On the contrary, there has been a notable improvement in the accident record during the period of greatest relative increase in average speed and average loading of trains. In 1923 there were 31 fatal and non-fatal cases of injury to employees on duty for each million man-hours worked. In 1938, there were fewer than 7 casualties per million man-hours, or a reduction of 72 per cent. In the same period average speed of freight trains between terminals increased 52 per cent. and average number of cars per train increased 21 per cent., while in passenger service schedules were greatly speeded up and

streamlined lightweight trains were introduced. In freight train and engine service the casualty rate was reduced between 1923 and 1938 by 64 per cent. and in passenger train and engine service by 72 per cent. In yard service employees were 72 per cent. safer, and the improvement was equally noticeable in other departments, casualties among men engaged in maintenance of way, for example, being 70 per cent. less frequent and those in the maintenance of equipment group, 86 per cent.

* * * *

Peruvian Corporation Railways

The railways and the connecting steamers on Lake Titicaca brought into the revenue account of the Peruvian Corporation for the year ended June 30, 1939, only £93,943, against £144,587 for the previous year. Gross railway traffic receipts fell from £948,631 to £804,092 notwithstanding a slight increase in the goods traffic handled from 1,455,000 tons to 1,458,000 tons. Increased road competition necessitating a further reduction in rates and the fall of 1¾d. in exchange were the sole causes of these poor results. On the other hand there was a reduction from £804,044 to £710,149 in the working expenses in Peru. There was a slight decrease in passengers, who numbered 2,212,000 against 2,366,000, but the policy of seeking economies by the substitution of modern diesel forms of traction is being steadily pursued, and the results on the Trujillo, Payta, and Pacasmayo lines during the year under review were very encouraging. Considerable economies are expected from the use of a new diesel locomotive for the Chimbote Railway. No steps have yet been taken to introduce any regulation of road transport. In the Chairman's speech at the recent annual meeting it was mentioned that the corporation would be prepared to take its share in road transport as soon as conditions were established so as to make it possible.

* * * *

United Railways of the Havana

Operation of the combined undertakings of the United Railways of the Havana and Regla Warehouses Limited in the year ended June 30, 1939, resulted in a net loss of £111,564, as the surplus of £28,413 from warehouses and wharves was exceeded by the loss of £139,977 on the railway. In the previous year the net loss was £112,407. The unsatisfactory railway results in 1938-39 were due to the serious economic condition of the country, aggravated by a smaller sugar crop and lower prices for sugar and tobacco. Road transport concerns continued cut-throat competition among themselves. In the second half of the year the passenger service on the Marianao Railway, which had previously caused heavy losses, was permanently suppressed. The accompanying table refers to railway operations only:—

	1937–38	1938–39
Passengers	2,949,620	2,660,018
Public goods, tons	6,471,920	6,276,235
Revenue train-miles	4,140,324	3,994,139
Average miles open	1,353	1,353
Operating ratio, per cent.	110·98	111·52
	£	£
Passenger receipts	160,187	147,754
Goods receipts	903,831	876,065
Gross receipts	1,266,553	1,215,488
Expenditure	1,405,648	1,355,465
Loss on working	139,095	139,977

An additional 230,000 of steam and petrol passenger train-miles has been replaced by diesel railcars during the year.

Lightweight Passenger Stock

The desirability of restricting the weight of railway passenger rolling stock is recognised by everyone concerned with the design of the vehicles and the operation of the trains. In the construction of coaches there are, of course, limits to weight reduction beyond which it would be unsafe to go, but much may be achieved by a skilful combination of materials and dimensions, and considerable economies thereby effected in the tare weight of the trains. The paper on "Lightweight Passenger Rolling Stock," prepared by Mr. W. A. Stanier for the joint meeting of the Institution of Mechanical Engineers and the American Society of Mechanical Engineers which was to have been held in New York last September, and an abstract of which we give in this issue, is a valuable technical contribution to literature on this subject and will doubtless be read with interest and profit by railway rolling stock designers and builders the world over. The saving in weight per vehicle and per passenger resulting from the new L.M.S.R. designing practice is noteworthy and in the aggregate considerable, and welding has played a highly important part. This is shown very clearly by a study of the comparative figures appearing in the tables, wherein it is seen that a welded lightweight coach complete turns the scale at over 4 tons less than a riveted standard coach of the same seating capacity, *i.e.*, 25 tons 19 cwt. 3 qr., compared with 30 tons 6 cwt. 0 qr.; the tare weight per passenger is shown as 1,385 lb. for the lightweight and 1,615 lb. for the standard vehicle. Continued investigation on the same lines, as Mr. Stanier remarks, suggests that further savings in weight remain to be effected.

* * * *

Locomotive Utilisation

A report on the subject of locomotive utilisation was discussed at the third annual meeting of the Railway Fuel & Travelling Engineers' Association held in Chicago during October. This set out numerous points of particular interest concerning the use of fuel in locomotives. The limitations caused by inadequate fuel capacity of tenders and the methods by which these limitations can be removed were dealt with. The Chairman, Mr. A. A. Raymond, Superintendent of Fuel and Locomotive Performance of the New York Central System, cited a case in which a passenger locomotive may use up the greater part of its fuel supply in a run of 350 miles. If the nearest coaling plant is so located that a special stop for replenishment must be made, a five-minute delay would mean a waste of over half a ton of coal and the replacement of say 727,000,000 ft.-lb. of energy lost in stopping the train from 80 m.p.h. and regaining that speed. Should the train schedule be of such a nature that an extra stop of this kind cannot be permitted, then to change the engine will cost 150 lb. of coal getting it to the running shed, 600 lb. for cleaning and banking the fire, 1,200 lb. for six hours in the shed and 750 lb. to restore the fire to its proper condition and get the engine to its train, a total of nearly 1¼ tons of fuel.

* * * *

High Speed Junctions

Although the war has inevitably brought to a halt in most European countries the tendency to increase the speed of trains, there is no reason to give up hope that the good work of cutting down overall times will not be resumed when peace returns, and with this in mind we commend to the notice of permanent way engineers a paper by Monsieur J. Chappellet, Assistant Engineer, Central Permanent Way Service, French National Railways, which appears in the October, 1939, issue of the *Bulletin* of the International Railway Congress Associa-

tion. It is rare indeed to find high-speed routes which do not contain blemishes in the form of permanent speed restrictions due to unsatisfactory track alignment or the presence of divergent junctions which must be traversed slowly. There are already indications that maximum speeds on unrestricted sections of track cannot economically be made much greater, and attention to the possibility of raising the minima is therefore becoming increasingly important. Much improvement has already been effected by remodelling and modifying lengths of track whose original alignment and sharpness of curvature make them unsuitable for high-speed traffic, and by the introduction of transition curves; further by sundry changes in the design and, so far as this country is concerned, the introduction of two-level chairs, it has been found possible to increase speeds through junctions without detriment to safety or comfort. M. Chappellet in his paper sets forth the improved running which can be obtained by the use of suitably transitioned junction curves in place of circular curves, showing the extent of such improvement by reproductions of accelerometer and Hallade records. Appended to the paper are two notes detailing the method by which the calculations for such junctions may be made.

* * * *

University on Wheels

Importance is rightly being attached today to the value of reading as an antidote to anxiety. Some, no doubt, will feel that the so-called " thriller " is an unnecessary stimulant in times like these, and in the hands of those who make daily journeys of considerable length between home and business we may expect to see some of the classics which have hitherto been only names to the average railway carriage reader. The reading habits of others will probably remain unchanged. We do not expect that our occasional carriage neighbour who for weeks before the war was wading through " Secrets of the Earth's Crust " will abandon his studies. He is not likely to fear that the knowledge he has acquired will be falsified by any battering the earth's crust may receive from its unruly tenants. If many more find refuge from the present in studying the historical past or the immeasurable future of science, the end of the war will at least find us alarmingly erudite. Works which have hitherto seemed too long to tackle may yet be found digestible in small doses between the periods of relief afforded by assuming the prostrate position on the carriage floor recommended to railway travellers in an air raid.

* * * *

The Expert in his Element

Now that timetables are comparatively hard to come by, the position of the railway expert has improved. If he finds himself in a large community of persons remote from their homes, he is likely to have his opinion sought at week-ends with flattering persistence. How to leave the establishment at the earliest moment of liberty and to defer return until the latest is the problem which his colleagues put to him with childlike confidence. If he is an honest man he tells the truth, namely, that with wartime services it is unsafe to rely upon three-minute connections at rural junctions and prudent to embark upon the *via dolorosa* at an early hour. If, on the other hand, he is cunning, he recommends a superficially more attractive but less certain service, so that he can return himself by the earlier train in comparative isolation and comfort, and be in bed and to all appearances asleep by the time his victims stumble in after a missed connection and five-mile walk in the blackout. We leave it to others to debate the preponderance of honesty or cunning in the make-up of the average railway expert.

German War Train Services

IN amplification of the brief particulars of war train services in Germany, which appeared under " Transport Services and the War " in our November 24 and December 8 issues, it is now possible to give a more comprehensive review of the facilities at present being offered to German travellers, with the help of a current German timetable. This is a small pamphlet of 120 pages, in which full details of all the main-line services are set out, but with the qualification printed on the front cover that trains may be cancelled for operating reasons; it has not been possible to obtain any reliable information, however, as to whether or not this qualification has been put to use. The timetable is dated October 10, and reveals train services which are in general more ample than those outlined in our November 24 issue. An interesting feature of the German arrangements is that with the exception of the train services between Munich and Italy *via* the Brenner, Munich, Vienna, and Budapest, and the sleeping cars, first class has been withdrawn; the extra-fare " FD " fast steam trains are now second class only; the majority of local trains are third class only; and " D " and " E " express and semi-fast trains are second and third class.

As previously mentioned, none of the high-speed diesel streamliners is shown as running, and for this reason most of the fastest end-to-end times listed are considerably longer than the best normally provided; but there are numerous bookings of " FD " and " D " expresses at speeds up to and even over 60 m.p.h. from start to stop. For example, between Berlin and Halle, 100·5 miles, there are timings in 91 and 93 min. (66·3 and 64·8 m.p.h.), and in 98, 103, 104, 105 (3), and 106 min.; the average speed of the entire present service of 20 trains is 51·6 m.p.h. On the Hamburg line there are bookings of 81 (2) and 82 min. for the 78·8 miles between Berlin and Wittenberge, 107 min. for the 106·2 miles from Berlin to Ludwigslust, and 72, 76, and 77 min. for the 72·0 miles between Ludwigslust and Hamburg, the overall average speed of the ten trains on this service being 51·9 m.p.h. Similarly an average speed of 51·1 m.p.h. is maintained by sixteen daily trains between Berlin and Leipzig. In brief, though the frequency of the long-distance service has been reduced by an average of 40 per cent., the fact that the " FD " and " D " class trains are running in their normal times, and in certain cases in times even less than normal, has resulted in German scheduled point-to-point speeds being the highest of those in all three belligerent countries, although over the greater distances the numerous stops made by " D " class trains help to lower the overall speeds. With the one exception of Königsberg, a summary of the increase in average journey time between Berlin and the twelve principal provincial cities in Germany works out at just over 6 per cent. The reason for the 39 per cent. increase in the case of Königsberg is that this line crosses the Polish Corridor, and involves the use of a considerable amount of temporary track, including the temporary bridge over the Vistula replacing the one at Dirschau that was blown up.

In compiling these lists of trains, the previous practice has been followed of including only those trains which offer optional facilities to the passenger; where a faster train overhauls a slower, for example, only the faster has been included, and of trains leaving or arriving within 10 min. or less of each other only one (the faster if there is a difference in speed) has been selected. Also, although certain additions have been made to the German services since October 10, such as the reinstatement of " FD " trains between Berlin and Frankfort, these have not been included in the table, as it was desired to give a survey of the German emergency service as first planned on a

fairly permanent basis, for comparison with the French services, similarly reviewed in our November 24 issue, and those of Great Britain, in the issues of September 29, October 5, 13, and 20. The only example in the table of an increase in service is between Berlin and Prague. These cities are only 230·0 miles apart, but connections between them have at no time been good, and before the war only three services were available in each direction daily; this has now been increased to four, and the average journey time remains unchanged. The increase of only 3 per cent. in average length of journey between Berlin and both Nuremberg and Munich is explained by the bringing into operation of electric haulage from Saalfeld through the Thuringian Forest to Nuremberg, including the long 1 in 40 climb southwards from Probstzella; this has resulted in a considerable acceleration of running times over this section, and it will be seen that the fastest present "FD" steam times Berlin—Nuremberg and Berlin—Munich are only 37 and 45 min. more respectively than those of the previous diesel high-speed service.

GERMAN STATE RAILWAY MAIN-LINE TIMETABLES, OCTOBER, 1939

FASTEST AND AVERAGE TIMES AND FREQUENCY OF SERVICE BETWEEN BERLIN AND VARIOUS PROVINCIAL CITIES IN NORMAL WINTER COMPARED WITH WAR SERVICE

Berlin and :—	Distance	Fastest Time		Average Time		War Deceleration		No. of Trains Daily		War Reduction in Frequency.
		Normal	War	Normal	War			Normal	War	
	miles	h. m.	h. m.	h. m.	h. m.	h. m.	per cent.			per cent.
Halle ..	100·5	1 19*	1 31†	1 51	1 57	0 06	5	32	20	39
Leipzig ..	102·1	1 18*	1 46	1 51	2 00	0 09	8	32	16	50
Dresden ..	111·8	1 49	2 20	2 27	2 32	0 05	3	18	12	33
Hamburg ..	178·2	2 17*	3 07	3 03	3 26	0 23	13	20	10	50
Breslau ..	204·7	2 32*	3 46	4 14	4 25	0 11	4	21	15	29
Prague ..	230·0	6 12	6 33	6 46	6 48	0 02	—	6	8	+33
Nuremberg	295·6	4 47*	5 24†	7 20	7 32	0 12	3	18	12	33
Frankfort ..	344·9	5 00*	6 51	6 59	7 47	0 48	11	18	12	33
Cologne ..	362·8	5 05*	6 37†	7 29	8 04	0 35	8	20	12	40
Königsberg ..	365·9	6 38†	9 25	7 31	10 25	2 54	39	14	6	57
Stuttgart ..	404·9	7 07*	8 14†	9 53	10 46	0 53	9	22	11	50
Munich ..	405·4	6 44*	7 29†	9 06	9 25	0 19	3	18	12	33
Vienna ..	494·2	10 32	11 06	12 22	13 26	1 04	9	12	8	33

* By diesel high speed service. † By "FD" (extra fare) steam service, 2nd class only.

As to through facilities to and from other countries, through carriages three times daily and through sleeping cars once nightly are advertised between Munich and Rome, through coaches and sleeping cars by a night service between Munich and Venice, and through coaches between Munich and Ventimiglia, Genoa, Milan, Ancona, and Merano. There are also three through services in each direction between Vienna and Budapest, one with sleeping cars. Restaurant cars are provided on a wide scale all over Germany. As to sleeping cars, a special pamphlet has been issued by the Mitropa, with its title page not only in German and Italian but also in French and English, giving details of 68 nightly sleeping car services. Sleeping car facilities are chiefly first and second class, but third class sleepers are run in the all-sleeping-car night express between Berlin and Munich, also between Berlin and Vienna, Frankfort and Hamburg, Frankfort and Munich, and on certain services in Austria, Bohemia, and Moravia.

* * * *

Bengal-Nagpur Railway

RESULTS obtained by this company during the year ended March 31, 1939, were disappointing in comparison with the previous year in which surplus profits exceeding interest charges were earned for the first time since the year 1927-28. For the year under review there was a deficit of Rs. 2,69,241 after meeting interest charges. The mileage in operation at the close of the year was 3,267, consisting of 2,468 miles 5 ft. 6 in. gauge and 799 miles 2 ft. 6 in. gauge. Included in the Bengal-Nagpur system are two principal main lines on the 5 ft. 6 in. gauge, one running west from Howrah (Calcutta) to Nagpur, where a junction is made with the Great Indian Peninsula Railway to Bombay, and the other southwards from Khargpur (72 miles west of Howrah) by the east coast to Waltair, where connection is made with the Madras & Southern Mahratta system, and to Vizagapatam. Gross earnings for the year under review showed the slight decrease of Rs. 84,319 or 0·09 per cent., but working expenses were higher by Rs. 65,61,503 or 10·92 per cent., so that net earnings were Rs. 66,45,822 lower. Some operating figures are shown herewith:—

	1937–38	1938–39
Mean mileage worked	3,268	3,267
Ton-miles	3,212,438,338	3,169,305,834
Passengers	19,983,484	20,284,250
Goods, tons	18,144,070	18,667,020
Operating ratio, per cent. ..	63·87	70·91
	Rs.	Rs.
Passenger receipts	1,65,23,909	1,63,32,561
Goods earnings	7,25,93,942	7,28,24,435
Gross earnings	9,40,80,497	9,39,96,178
Expenses	6,00,86,605	6,66,48,108
Net earnings	3,39,93,892	2,73,48,070

Passenger numbers increased by 300,766 or 1·51 per cent., but in passenger receipts there was a decrease of Rs. 1,91,348 or 1·16 per cent. In the first and second classes there was a fall both in numbers and receipts, but "intermediate" numbers and receipts improved slightly, and third class with an increase of 264,096 in numbers brought in Rs. 1,13,006 less. Tonnage of goods increased by 522,950 tons or 2·77 per cent., and earnings from goods traffic by Rs. 2,30,493 or 0·32 per cent. The addition to working expenses under ordinary revenue is mainly due to the increase in the price of coal, of materials generally, especially steel, for repairs to rolling stock and to hire of wagon stock. Under replacement and renewals the increase is on account of a large programme of renewals of track, bridges, structural works and rolling stock (including replacement of 600 wagons).

DORMAN LONG ACTIVITIES.—Speaking at the jubilee annual general meeting of Dorman Long & Co. Ltd., Viscount Greenwood, the Chairman, said that in spite of many difficulties owing to pre-war and war conditions, the company had maintained its productive strength and output, and this after 14 weeks of war. The profits on trading at £1,481,395 showed practically no reduction.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Centenary of "Bradshaw"

5, Eccleston Square, S.W.1
December 8

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have been greatly interested in your excellent article on the Centenary of *Bradshaw*, which was published in your issue of November 3 last, and in the subsequent correspondence shedding light upon what is in many ways an obscure but intriguing subject.

Since the fully dated 1840 *Bradshaw's Railway Companions* are so scarce, it may be of some interest to mention that those in my collection include an edition of "No. 3," "1st Mo 1st 1840"; a No. 2 in a number 1 cover with title page pasted over "3rd Mo 2nd 1840"; and a "4th Mo 1st 1840." My other 1840's differ individually but are without month date. A Bradshaw publication which deserves mention and which has received but little attention was one which tilted at the *A.B.C. or Alphabetical Railway Guide* issued first October, 1853, by William Tweedie of 337, Strand, London, and sold at 6d. The *A.B.C.* was established in the favour of a section of the travelling public, hence the short life of these *Bradshaws*. Nevertheless, the latter is worthy of record. Here are particulars of the only one I possess and the only one I have seen:—

The London Bradshaw. May, 1868. Price 4d. By Post 5d. No. 6. *Bradshaw's (Through Route) London Railway Guide by Alphabetical and Tabular Arrangement; City, Metropolitan, Suburban and Provincial;*

Showing the train service between London and all parts of Great Britain. Also the Steamers from London and Southampton; The London Cab Fares, Omnibus Routes, &c. Illustrated with new Map of the Environs of London and Railway Station Map of the Metropolis and Suburbs.

London: W. J. Adams, 59, Fleet Street, E.C. Manchester: Bradshaw and Blacklock, Albert Square. And Sold by all Booksellers, and at all Railway Stations.

The 148-page *Guide* is complete with its faded pink printed wrappers and has a folding map for 1865.

Only nine monthly numbers of the original 1862 *London Railway Guide* were, I believe, published, though it was revived, with the same title, in December, 1867. It was again unsuccessful, and in September, 1868, it became the *London and Provincial Bradshaw*, lingering till 1887.

Another publication which may be referred to, and of which I have "No. 1" was:—

The Traveller's Miscellany, and Magazine of Entertainment. A companion for the road, the rail, and the steam boat; the tourist for pleasure, and the man of business, uniting information with amusement. London: W. J. Adams, At Bradshaw's Railway Publication Office, 59, Fleet Street. No. 1. March 1847. Price 6d.

Manchester, Bradshaw and Blacklock; Liverpool, Wilmer and Smith; Glasgow, James Macleod; Dublin, Mason, D'Olier Street; and all booksellers, and at every important railway station Lake, Printer. 170, Fleet Street.

This 68-page—exclusive of advertisement pages—pamphlet, $4\frac{1}{8}$ in. × $6\frac{3}{8}$ in., was published during Bradshaw's life and is in fine condition, being complete with its original printed paper wrappers. On the front wrapper and on the title page are small vignettes of steamships, a train coming out of a tunnel, and so forth. As with most Bradshaw publications the presence of the front wrapper is of the greatest importance as it was upon it alone that the serial number and date were printed.

Yours faithfully,
JOHN PHILLIMORE

Engineering Institution Membership

Drakewell House,
Bow Brickhill,
Bletchley, Bucks
December 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—An engineering institution must, if it is adequately to maintain its true characteristics and fulfil its rightful objects, exercise the greatest care in accepting applications for membership. A survey of the lists of members indicates quite clearly that this principle is not in every case adhered to so closely as is to be desired, and it is, therefore, not to be wondered at that fully qualified engineer members are prone to dissent from the admission of applicants who on the basis of qualification and achievement have little to show in justification of their acceptance.

In my view and that, as I know, of many others, only those who have served a pupilage or apprenticeship in an engineering works or have been articled to a professional firm of high standing, subsequently holding positions of responsibility in engineering, should ever be admitted to the rank of *Member*. Mere interest in the subject and the acquisition of a certain amount of more or less practical knowledge by reading and study may justify the person concerned becoming an Associate but nothing more. Associate *Membership* is, of course, entirely different and may rightly be regarded as a stepping stone to advancement to the status of full member.

Yours faithfully,
CHAS. S. LAKE,
M.I.MECH.E., M.I.LOCO.E.

PUBLICATIONS RECEIVED

Nazi Germany Can't Win. An Exposure of Germany's Strategic Aims and Weaknesses. By Wilhelm Necker. Translated by Edward Fitzgerald. London: Lindsay Drummond, 6-7, Buckingham Street, W.C.2. $8\frac{3}{4}$ in. × $5\frac{1}{2}$ in. × $1\frac{1}{4}$ in. 364 pp. Price 10s. 6d. net.—Believing that it is unwise to imitate the ostrich, we are moved to say that if the rest of this book is not more reliable than the statements in it relating to the condition of German railways at the outbreak of war, many will be misled. Dr. Necker's evidence of the weakness of the German transport system is based on such statements as that "in 1926 the German State Railways had 26,700 locomotives, of which it used about 20,000 for its normal services, and the rest for special purposes or as a reserve for worn-out or temporarily incapacitated locomotives. By 1937 the number of locomotives had been reduced to 21,900, and since then the figure has shrunk still further. In addition, many of the machines are now of an obsolete pattern and require replacement. . . . As late as 1934 the German State Railways still had 2,400 locomotives in reserve, but by 1938 the number had fallen to 400 up and down the country. . . . The available locomotives are being worn out more rapidly than ever, owing to defective material, for instance, original copper firing parts have been replaced by iron, and in the same way *Ersatz* material has been used everywhere possible, with the result that there has been a great deterioration in railway material." As any railwayman knows, such figures as the above mean little without essential relevant data which are not given by the author. The reduction in the number of locomotives in Germany may be matched by similar reductions on almost any well-managed railway system in the world, and, apart from electrification and the introduction of diesel traction, may be accounted for mainly by the greater power, efficiency, and availability of the modern locomotive as compared with its predecessor. As to locomotives "in reserve," that again depends very largely upon traffic demands, and the author says that traffic rose from 280 million tons in 1932 to 510 million tons in 1938. Such a condition might well account for bringing into active service

every reserve locomotive in the country. The replacement of "original copper firing parts" by "iron" presumably means that steel fireboxes have been substituted for copper, but there is no reason why, as elsewhere, steel fireboxes should prove less satisfactory than those of copper.

"One thing is quite certain," writes the author in italics, "Germany cannot wage a war successfully with her present railway apparatus." The evidence offered would not convince any practical railwayman, but is so presented that it might well cause the general public to rest on their oars. Propaganda since the last war has lulled the British public into a progressive weakening of Britain's ability to wage a successful war. We have accepted the shutting down of shipyards so that our building capacity has been reduced by at least 40 per cent.; the sale of hundreds of ships to potential enemies to provide them with steel; and the closing down and restriction of many of our heavy industries at a time when other countries now not friendly to us were developing theirs. It is the distortion of facts and the suppression of truth that nowadays makes propaganda so effective and so dangerous. The public would be well advised to treat with scepticism everything it reads and to believe only that which it can itself verify. We believe the statement made in the title of this volume—that Nazi Germany can't win—to be true, but we base our view on more substantial grounds than those advanced by the author, and false optimism about alleged weaknesses in the physical equipment of Germany will not strengthen our arm. Readers of THE RAILWAY GAZETTE and the many British and other railwaymen who have availed themselves of facilities to examine the German railways in detail, will presumably not be deceived. Doubtless the demands on the Reichsbahn of the past few weeks have been severe, but the well-managed and well-equipped system as we knew it up to the outbreak of war can scarcely have yet deteriorated to such an extent as to be one of the chinks in the armour of our enemy.

Hoffmann Bearings.—Among those whose business includes the study of trade literature, the publications of roller bearing manufacturers have always been accorded a good reception by reason of the high standard of production and the detailed information given. The latest catalogue—No. LC. 10—of ball and roller bearings made by the Hoffmann Manufacturing Co. Ltd., of Chelmsford, maintains the tradition. We would be lacking in the human touch if we did not deplore the lack of specific mention of the many Hoffmann railway applications, but to the prospective buyer this is of no consequence, and it is to the prospective buyer that this book is of prime interest, for it gives him all he wants to know, including the price, of an extraordinarily wide selection of ball and roller bearings and needle bearings. There are ample data on the design, selection, and application, which help to make this book almost a treatise on ball and roller bearings—particularly in this applications to plain, helical, epicyclic and worm gears.

THE SCRAP HEAP

"FUNNY, THESE RUSSIANS"

Their enthusiasms are (locally) very infectious, though they usually cause among Westerners merely a politely raised eyebrow. For instance, there was all that fuss over the Moscow underground. One might have imagined that this was the first underground railway ever to be built. They took you to admire it while it was being built, and even expected you to do a little unpaid digging on it—which struck me as a little unethical as a trade unionist. However, there it was—the pride and joy of a people with a great sense of comedy, but no sense of humour. And I would not have put it beyond the Russians to name their children "Metrovitch" when it was finally completed.—*Spike Hughes in the "Daily Herald."*

* * *

A word, a smile, and the stranger at your elbow may become an interesting friend. All through life we deny ourselves stimulating fellowship because we are too proud or too afraid to unbend. When the *City of San Francisco* was derailed on the Nevada desert last summer, people who had stared without speaking all across the continent began to talk to each other in the sudden darkness. Aisles were demolished, doors jammed, escape impossible for four hours till axes could liberate the passengers. A friend of mine was in the luckless Pullman that hung over the Humboldt river. She was hurt, as was the unknown man in the next berth, but they talked and joked and their high spirits sustained the whole car. Why should we wait until trouble makes comrades of us all?—*Condensed from "Your Life," in "The Reader's Digest" for December.*

During the somewhat lengthy stop of an express train at a junction station—partly due to early arrival—a porter had been consistently repeating at intervals, "Next stop ——." This finally got on the nerves of a somewhat irascible gentleman occupying the corner seat of the compartment immediately outside which the porter was standing. Lowering the window he remarked: "Never mind about the next *stop* my man: its the next *start* I'm interested in."

The University of British Columbia is investigating the nature of cosmic radiations in great altitudes. The assistance has been obtained of the Trans-Canada Air Lines, whose planes journey for 2½ hr. over the Canadian Rockies. Included in the regular cargo or mail, passengers, and express-freight is a box containing a tiny photographic plate prepared with a special emulsion to record cosmic ray activity. As the rays can penetrate several feet of steel, they have no trouble in passing through the duralumin shell of the aircraft and registering on the plate.

By courtesy of "The Weekly Telegraph," Sheffield

Driver: Who pulled the cord?
Guard: I did. I'm looking for the bloke that left that bull terrier in my van

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

SOUTH AFRICA

Stock to be Built in the Union

The administration is embarking on a three-year rolling stock building programme involving an expenditure of over £4,000,000, of which approximately two-thirds will be spent in South Africa. The Government, it is stated, wishes to enlist the aid of outside firms in this country in connection with the programme, the object being to afford extra employment in South Africa. It was intended originally to import wagons of certain types at a cost of just over £2,000,000, and to construct in the workshops of the administration other types, such as tank wagons and brakevans at a cost of about £2,000,000. It is felt now, however, that a larger proportion of the programme should be carried out in the Union. So that although it has been decided to import some of the open bogie trucks which were to have been built in South Africa, a large proportion of drop-sided bogie trucks which originally were to have been imported are to be built in the country. The result of this plan is that 1,200 more bogie trucks will be built in the Union than was contemplated originally, involving an increased expenditure here of £795,000.

The administration is giving consideration to the possibility of increasing the number of trucks normally built in South Africa, by importing steel sections and calling on outside firms to assist in the construction of under-frames and other parts. This should result in giving employment to many more men in the Union.

INDIA

Special Tour and Mela Traffic

Students and professors of the Bombay University recently toured South India in a special excursion train. The excursionists visited the Nilgiris, Rameswaram, Madura, Pondicherry, and other places. Special facilities were provided by the South Indian Railway at each of the stations visited by the tourists.

The Sonepur Mela at Sonepur, on the Bengal & North Western Railway, is the largest and most important annual fair in India, and the Bihar Government and the railway have been busy preparing for its opening in November. This mela is reputed to be the largest market for the sale of horses, cattle, and other livestock.

New Surveys

The Railway Board has sanctioned the carrying out of engineering and traffic investigations by the agency of the South Indian Railway for the construction of new metre gauge railways between (i) Tanjore—Pattukkottai and (ii) Arantangi—Karaikhudi.

BRAZIL

Extension of Araraquara Railway

The administration of the Araraquara Railway has placed a contract with a São Paulo firm for the construction of an extension of that metre-gauge system from Mirasol to Porto Taboado, about 200 km. (124 miles) in length. The São Paulo State Government has sanctioned the purchase of 20,000 contos' worth of rolling stock and other equipment for the extension. The existing line owned by this company is 186 miles in length, and is also known as the North of São Paulo Railway. The head office is at Araraquara, and the rolling stock consists of 47 locomotives, 88 coaches, and 515 wagons.

ARGENTINA

Railway Receipts in 1938-39

The Instituto de Estudios Economicos Transporte recently issued its annual statistical summary of the traffic receipts of the privately-owned Argentine railways for the financial year ended June 30, 1939, and comparisons with the corresponding figures of the previous financial period. The figures are as follow :—

PASSENGER RECEIPTS

	1937–38 Pesos	1938–39 Pesos	Increase or decrease Pesos	Per cent.
Buenos Ayres Great Southern	33,128,000	31,555,000	— 1,573,000	— 4·7
Central Argentine	29,416,000	27,144,000	— 2,272,000	— 7·7
Buenos Ayres & Pacific	10,052,000	9,918,000	— 134,000	— 1·3
Buenos Ayres Western	9,903,000	9,560,000	— 343,000	— 3·5
Entre Rios	2,064,000	2,166,000	+ 102,000	+ 4·9
Argentine North Eastern	1,781,000	1,830,000	+ 49,000	+ 2·8
Total British-owned	86,344,000	82,173,000	— 4,171,000	— 4·8
Province Santa Fe	1,218,000	1,226,000	+ 8,000	+ 0·7
Buenos Aires Cia. General	768,000	712,000	— 56,000	— 7·3
Buenos Aires Central	662,000	656,000	— 6,000	— 0·9
Rosario-Puerto Belgrano	291,000	259,000	— 32,000	—11·0
Total national jurisdiction	89,283,000	85,026,000	— 4,257,000	— 4·8
Midland	290,000	296,000	+ 6,000	+ 2·1
TOTALS	89,573,000	85,322,000	— 4,251,000	— 4·7

GOODS RECEIPTS

	1937–38 Pesos	1938–39 Pesos	Increase or decrease Pesos	Per cent.
Buenos Ayres Gt. Southern	72,444,000	70,236,000	— 2,208,000	— 3·0
Central Argentine	67,038,000	70,900,000	+ 3,862,000	+ 5·8
Buenos Ayres & Pacific	55,612,000	57,429,000	+ 1,817,000	+ 3·3
Buenos Ayres Western	24,220,000	25,602,000	+ 1,382,000	+ 5·7
Entre Rios	8,564,000	9,720,000	+ 1,156,000	+13·5
Argentine North Eastern	5,725,000	6,148,000	+ 423,000	+ 7·4
Total British-owned	233,603,000	240,035,000	+ 6,432,000	+ 2·8
Province Santa Fe	11,530,000	13,861,000	+ 2,331,000	+20·2
Buenos Aires Cia. General	9,705,000	9,324,000	— 381,000	— 3·9
Buenos Aires Central	3,460,000	3,424,000	— 36,000	— 1·0
Rosario-Puerto Belgrano	3,950,000	4,631,000	+ 681,000	+17·2
Total National jurisdiction	262,248,000	271,275,000	+ 9,027,000	+ 3·4
Midland	1,810,000	2,177,000	+ 367,000	+20·3
TOTALS	264,058,000	273,452,000	+ 9,394,000	+ 3·6

TOTAL TRAFFIC RECEIPTS.

	1937–38 Pesos	1938–39 Pesos	Increase or decrease Pesos	Per cent.
Buenos Ayres Gt. Southern	124,624,000	120,519,000	— 4,105,000	— 3·3
Central Argentine	107,058,000	108,320,000	+ 1,262,000	+ 1·2
Buenos Ayres & Pacific	74,106,000	75,225,000	+ 1,119,000	+ 1·5
Buenos Ayres Western	38,259,000	39,433,000	+ 1,174,000	+ 3·1
Entre Rios	12,544,000	13,972,000	+ 1,428,000	+11·4
Argentine North Eastern	8,226,000	8,751,000	+ 525,000	+ 6·4
Total British-owned	364,817,000	366,220,000	+ 1,403,000	+ 0·4
Province Santa Fe	13,630,000	15,915,000	+ 2,285,000	+16·8
Buenos Aires Cia. General	11,809,000	11,449,000	— 360,000	— 3·0
Buenos Aires Central	5,943,000	5,485,000	— 458,000	— 7·7
Rosario-Puerto Belgrano	4,426,000	5,125,000	+ 699,000	+15·8
Total National jurisdiction	400,625,000	404,194,000	+ 3,569,000	+ 0·9
Midland	2,409,000	2,779,000	+ 370,000	+15·4
TOTALS	403,034,000	406,973,000	+ 3,939,000	+ 1·0

Other statistical figures in the summary of the institute compare as follow :—

	1937–38	1938–39	Increase or decrease	Per cent.
Passengers, number	151,182,000	155,376,000	+ 4,194,000	+ 2·8
Passenger—km.	3,889,004,000	3,895,183,000	+ 6,179,000	+ 0·2
Goods, tons	33,173,000	34,521,000	+ 1,348,000	+ 4·2
Goods ton—km.	8,990,404,000	9,448,218,000	+ 457,814,000	+ 5·1

EIRE

Report of the Transport Tribunal

In the Dail on November 8 the Minister for Industry and Commerce was asked if he were in a position to publish the report from the Transport Tribunal, or if not, whether he could state the dates approximately when the report would be published, and whether, having regard to the present condition of the transport industry, he would say when proposals for its reorganisation would be introduced.

The reply given was that the Minister was not yet in a position to say when the report would be published, and, since it was presented, consultation with other departments had become increasingly necessary before a decision, even on broad principles, could be taken. Information on the subject is awaited with anxiety.

Farmers' Strike

The effect of this strike on railway traffic is becoming apparent in so far as the Dublin market and adjacent fairs and markets are concerned. On Thursday, November 23, no stock was exhibited in the Dublin market, and several fairs and markets have not been held, with the result that the railway has lost the conveyance of the traffic to Dublin. The effect of the milk strike is that the traffic is at present being conveyed from longer distances and from outside the strike area, to Dublin.

MOZAMBIQUE

Half-Year Returns

For the half-year to the end of June last the railways, ports, and railway-operated road motor services of Mozambique earned a total revenue of £577,492, of which £535,010 came from the Lourenço Marques Division. Air services produced an additional £22,031. Against the aggregate revenue of £599,523, operating expenditure amounted to £308,581, leaving a surplus of £290,942 to meet financial charges and profit.

New Equipment

A new breakdown crane weighing 134 tons and with a lifting capacity of 76 tons has just been delivered to the Lourenço Marques system, and is stated to be the largest of its kind in South Africa.

CANADA

St. Lawrence Seaway Scheme

An indirect consequence of the war is the revival of the scheme for a seaway outlet through the St. Lawrence river. The scheme is an international one, as the Government of the U.S.A., under the original plan, would be responsible for deepening the channel of the upper river. Huge dams are contemplated and a considerable power development forms an essential part of the scheme. Doubts are expressed in some quarters as to what extent the resulting water transport facilities would affect the fortunes of the railway system, which in part already forms an almost intolerable financial burden on the community. It is argued that the St. Lawrence scheme should be considered in conjunction with the problem of transportation as a whole. On the other hand, if there is a danger that power scarcity may retard Canada's war effort, it may be well to consider the question apart from the transport issue.

THE FAR EAST

New South Manchuria Railway Capital Works

Mr. T. Ohmura, President of the South Manchuria Railway,* is seeking the Japanese Government's sanction for a new capital increase to provide for future extensions. Next year's budget shows an increase in expenditure over the current year's figure of Y. 100,000,000 (appr. £6,000,000). Some of the principal works envisaged are the doubling of certain main lines, the inauguration of a number of new inland bus services, and harbour extensions.

Transfer of North Korean Railways to S.M.R.

The ownership of the North Korean Railways, the lines in the Seishin and Rashin ports district, inside Korean territory, has now been transferred to the S.M.R., in exchange for the company's rendition of extra-territorial rights in the railway zone in Manchukuo. These lines were already under S.M.R. management.

Recruitment for North China Railway in Japan

The North China Railway Company, operating the railways in the occupied part of North China is steadily importing Japanese railway employees; the total number at work is approaching 2,000, and provision has been made for 3,000 to be in service by the end of 1939. These men are being recruited through the Japanese Ministry of Communications in Tokyo, and a certain amount of persuasion and compulsion is apparent. Some official "consolation parties" are, on the one hand, accompanying the men to relieve their home-sickness, and others are sent to cheer and comfort the families left at home.

The Trans-Siberian Railway and Connections

The Trans-Siberian Railway service is running normally between Moscow and Vladivostock, and the connection with Manchukuo is maintained via what is now a branch line from Chita to Manchouli. The Manchurian State Railways run a connecting train from Manchouli to Harbin over the now standard gauge main line of the former Chinese Eastern Railway. Change of trains is necessary at Harbin for Dairen, and in addition at Mukden for Tientsin and all other stations in China.

* As reported on page 482 in our issue of October 13 last.—[ED. *R.G.*]

NORWAY

No Curtailment of Services

The State Railways goods and passenger traffics during October and November have increased by some 20 per cent., but no difficulty has been experienced with regard to coal supplies, and no curtailment of services is so far necessary on account of fuel shortage. Apart from the fact that normal supplies have come to hand, the railways have taken the precaution of storing over 200,000 tons of coal, or enough to meet the whole year's consumption.

DENMARK

Bridges Protected from Floating Mines

The piers and abutments of the Little Belt bridge have now been protected against accidental contact with floating mines, and with a similar object in view, experiments have been made to see how objects of the same size and shape would behave in the neighbourhood of the much smaller piers of the Storstrom bridge.

Light Engines in Collision

On November 2 a glancing collision occurred between two light engines at Copenhagen with the result that the smaller of the engines, a 37-ton 0-6-0 shunting tank, overturned the larger one, a 98-ton 2-6-4 suburban tank. No one was hurt, and no dislocation of traffic took place. An evening paper announced "David conquers Goliath!"

SWITZERLAND

Increased Traffic on the Federal Railways

The August figures of the Federal Railways showed for the first time this year a slight improvement on the passenger side as compared with last year, and the September results indicate a further increase. This is largely due to restrictions in road traffic on account of petrol rationing, requisitioning of lorries in connection with the mobilisation, and prohibition of Sunday driving, also to heavy traffic to the National Exhibition at Zurich. Goods traffic has throughout the year shown a marked increase over 1938 figures, and this, with a continued limitation of expenditure to the extent of about fr. 5,000,000, has resulted in the net receipts for the first nine months being in excess by fr. 15,680,456 over the totals for the same period last year, giving a figure of fr. 92,692,461.

Of the private railways, those catering chiefly for tourist traffic recorded in many instances satisfactory results in August, but since the outbreak of the war receipts have fallen to a disastrously low level, with no prospect of a good winter season to permit of a recovery.

BRITISH TRAIN SERVICES IN THE 1914-19 WAR

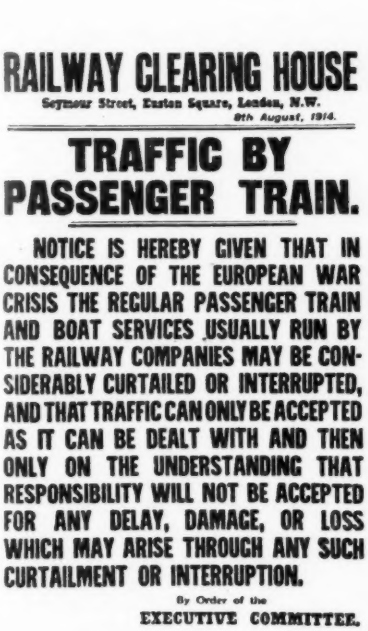
A review of developments from the outbreak of war in 1914 to the armistice of 1918

From a correspondent

THE articles on the British emergency timetables, which appeared in THE RAILWAY GAZETTE between September 29 and October 20, contrasted today's services with those of October, 1918. It may be of interest to give some idea of the general characteristics and policy of the 1914-18 timetables, and to review the changes which brought the train service down to the level of October, 1918. When the railways passed under Government control on August 4, 1914, the competitive spirit, though weakened by some pooling in England and Scotland, was still very much alive, and it was by no means easy to disregard the possible future effect on each company's revenue of the various economies which were ordained, or to watch "allocation" turning over to a rival some treasured and long fought-for plums of passenger and freight business. To this must be added the great difficulty of carrying out, at short notice, revisions in which many companies were then concerned (contrast, for example, the positions at York, Carlisle, or Perth, from the timetable clerk's point of view, in 1914 and 1939) and of cutting down passenger mileage by successive slices (the method usually followed from 1914-18); for when the service is already meagre, a further cut may effect no real saving and merely result in an engine standing idle in steam. It will thus be realised why the old war services, which were based on no pre-arranged scheme, were very much more generous than those of September, 1939, apart from the special considerations of aerial warfare that were in the minds of the framers of the present emergency scheme. There is something to commend, too, in a war timetable which starts from an absolute minimum and builds up from that framework a service which meets all the more serious complaints, for it should avoid the defects of hasty preparation, and is easier for the public to keep pace with than successive lists of cancellations.

After the 1914 August Bank Holiday passengers had been brought home again, a number of seasonal trains and a few lightly-loaded expresses were cancelled, but otherwise the train services remained normal for some time. In October 1914, the Great Eastern's "Radical Alterations" timetable appeared, though many of its best features had to be withdrawn by notices in January and February, 1915. There were also a few cancellations to ease sections of line which were overtaxed by special traffic, such as the Metropolitan Widened Lines. On February 22, 1915, the Midland made a big reduction in its express services; the London & North Western took off the Sunny South Express in March, and, after a fairly normal summer service, made its first deceleration in October, 1915. The London and Birmingham schedule was increased from 2 hr. to 2 hr. 10 min. (with added stops) by Euston and Paddington in January, 1916, and in the following May there were several withdrawals of expresses from Euston and King's Cross, so that with increased loads, new stops, and very little extra time, the locomotive work required from the spring to the close of 1916 was of a very high order. The traffic—passenger and freight—moved by the railways in these first 2½ years of war could never have been carried had the line occupation been increased by any great deceleration of the passenger services.

The first general reduction was the outcome of a Railway Executive Committee order of December 1, 1916, and


RAILWAY CLEARING HOUSE

Seymour Street, Euston Square, London, N.W.

8th August, 1914.

TRAFFIC BY PASSENGER TRAIN.

NOTICE IS HEREBY GIVEN THAT IN CONSEQUENCE OF THE EUROPEAN WAR CRISIS THE REGULAR PASSENGER TRAIN AND BOAT SERVICES USUALLY RUN BY THE RAILWAY COMPANIES MAY BE CONSIDERABLY CURTAILED OR INTERRUPTED, AND THAT TRAFFIC CAN ONLY BE ACCEPTED AS IT CAN BE DEALT WITH AND THEN ONLY ON THE UNDERSTANDING THAT RESPONSIBILITY WILL NOT BE ACCEPTED FOR ANY DELAY, DAMAGE, OR LOSS WHICH MAY ARISE THROUGH ANY SUCH CURTAILMENT OR INTERRUPTION.

By Order of the

EXECUTIVE COMMITTEE.

SPECIAL RAILWAY NOTICE

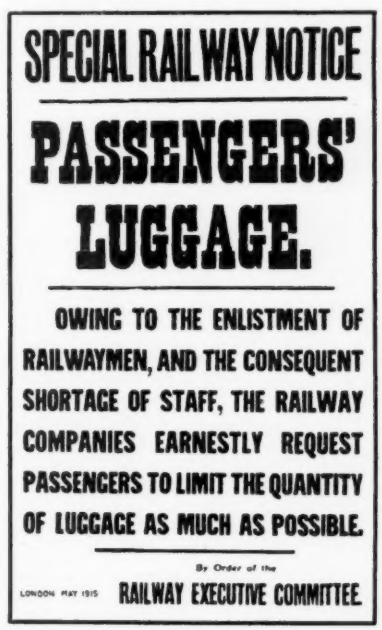
WITHDRAWAL OF EXCURSION AND CHEAP FARE FACILITIES

On and from MONDAY, 29th MARCH, 1915, and until further notice, EXCURSION AND CHEAP FARE FACILITIES (with certain exceptions) will be WITHDRAWN.

Particulars of the Reduced Fare Bookings which will remain in operation can be obtained at the Railway Stations.

By Order of the

RAILWAY EXECUTIVE COMMITTEE.


SPECIAL RAILWAY NOTICE

PASSENGERS' LUGGAGE.

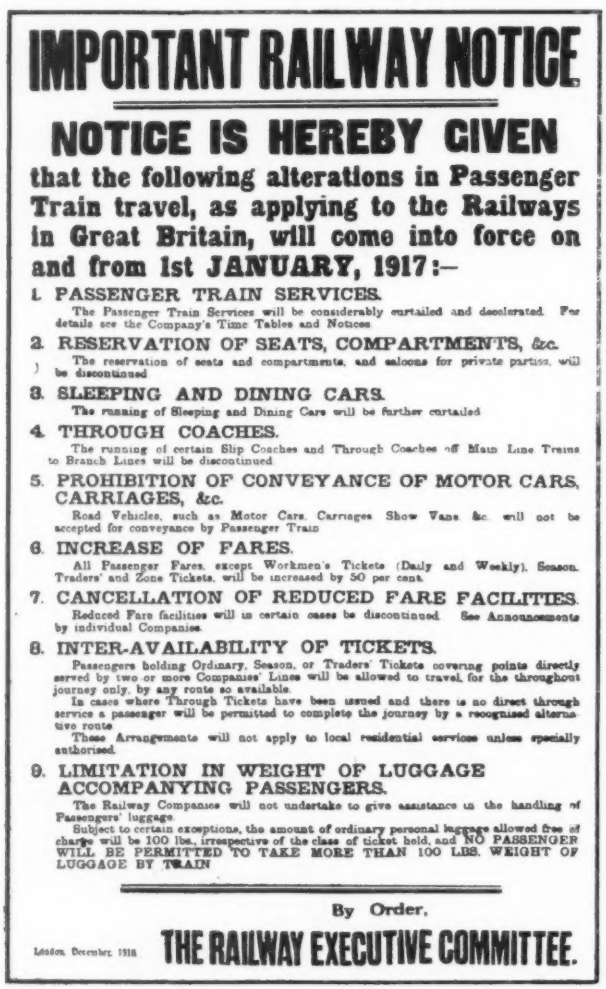
OWING TO THE ENLISTMENT OF RAILWAYMEN, AND THE CONSEQUENT SHORTAGE OF STAFF, THE RAILWAY COMPANIES EARNESTLY REQUEST PASSENGERS TO LIMIT THE QUANTITY OF LUGGAGE AS MUCH AS POSSIBLE.

By Order of the

LONDON MAY 1915 RAILWAY EXECUTIVE COMMITTEE.

These posters, issued in the winter of 1914-15 to announce curtailments of passenger facilities, make an interesting comparison with those of the present war

was carried out by most companies from January 1, 1917 (the Great Eastern, North Eastern, and Lancashire & Yorkshire adopted later dates) when there was a 50 per cent. increase in fares, except in season and workmen's tickets, in order to reduce traffic. At this date most of the through cross-country trains vanished, such as the Great Western and South Eastern services *via* Reading and Redhill, the Barry and Newcastle, and the Birkenhead and Bournemouth (its Manchester portion, from Wellington, had gone in October, 1915), though one fast service to Bournemouth, over the Somerset & Dorset, survived to the very end (taking just under 5½ hr. from Birmingham to Bournemouth as against 7½ hr. today), as did also the fast train over the Midland & South Western Junction from Cheltenham to Andover. The Executive order still laid down no uniform deceleration, but gave minimum times for the journey between London and certain selected towns, safeguarding the public by quoting also a maximum time which the best train was not to exceed. Under this plan, the Glasgow and Edinburgh journey time became at least 9 hr. (as against 8¼ and 8 hr. at the end of 1916); Manchester and Liverpool 4½ hr. and 4 hr. 40 min. compared with 3 hr. 51 min. and 3 hr. 55 min.; Birmingham 2½ hr. instead of 2 hr. 10 min.; Bristol 2¼ instead of 2 hr.; Exeter 3¼ instead of 3 hr.; Brighton 65 instead of 60 min.; and Hastings 1 hr. 50 min. instead of 1 hr. 40 min. No towns in the Eastern Counties, nor such competitive points as Sheffield and Leeds, were mentioned, and the worsening was very uneven; Manchester and Liverpool suffered seriously while Exeter and the West of England need have lost but little, and Bristol was very kindly treated as contrasted with Birmingham. But in this first interference with commercial services, Birmingham did not receive any such drastic treatment as in September, 1939, for departures from Euston at 9.20 and 11.50 a.m., 1.50, 4.35, and 6.55 p.m., and from Paddington at 10.30 a.m., 2.0 and 5.30 p.m., with up trains from New Street at 7.30, 8.40, and 11.20 a.m., 2.35 and 4.50 p.m., and from Snow Hill at 12.15, 2.50, and 5.50 p.m. did not involve any great hardship to business men.



IMPORTANT RAILWAY NOTICE

NOTICE IS HEREBY GIVEN

that the following alterations in Passenger Train travel, as applying to the Railways in Great Britain, will come into force on and from 1st JANUARY, 1917:—

1. **PASSENGER TRAIN SERVICES.**
The Passenger Train Services will be considerably curtailed and decelerated. For details see the Company's Time Tables and Notices.

2. **RESERVATION OF SEATS, COMPARTMENTS, &c.**
The reservation of seats and compartments, and saloons for private parties, will be discontinued.

3. **SLEEPING AND DINING CARS.**
The running of Sleeping and Dining Cars will be further curtailed.

4. **THROUGH COACHES.**
The running of certain Slip Coaches and Through Coaches off Main Line Trains to Branch Lines will be discontinued.

5. **PROHIBITION OF CONVEYANCE OF MOTOR CARS, CARRIAGES, &c.**
Road Vehicles, such as Motor Cars, Carriages, Show Vans, &c. will not be accepted for conveyance by Passenger Train.

6. **INCREASE OF FARES.**
All Passenger Fares, except Workmen's Tickets (Daily and Weekly), Season, Traders' and Zone Tickets, will be increased by 50 per cent.

7. **CANCELLATION OF REDUCED FARE FACILITIES.**
Reduced Fare facilities will in certain cases be discontinued. See Announcements by individual Companies.

8. **INTER-AVAILABILITY OF TICKETS.**
Passengers holding Ordinary, Season, or Traders' Tickets covering points directly served by two or more Companies' Lines will be allowed to travel for the throughout journey only, by any route so available.
In cases where Through Tickets have been issued and there is no direct through service a passenger will be permitted to complete the journey by a recognised alternative route.
These Arrangements will not apply to local residential services unless specially authorised.

9. **LIMITATION IN WEIGHT OF LUGGAGE ACCOMPANYING PASSENGERS.**
The Railway Companies will not undertake to give assistance in the handling of Passengers' luggage.
Subject to certain exceptions, the amount of ordinary personal luggage allowed free of charge will be 100 lbs., irrespective of the class of ticket held, and NO PASSENGER WILL BE PERMITTED TO TAKE MORE THAN 100 LBS. WEIGHT OF LUGGAGE BY TRAIN.

By Order,

London, December, 1916. **THE RAILWAY EXECUTIVE COMMITTEE.**

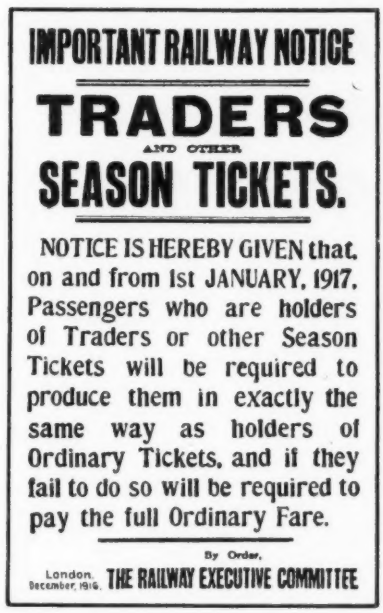
Announcement of the first general reduction of the war of 1914-19, under a December 1, 1916, order of the Railway Executive Committee

A certain amount of allocation was arranged, by the companies themselves, in the brief time available for preparing new services. Thus the 10.0 a.m. from Euston (at 9.30) carried Scotch traffic from London for the Perth area and Aberdeen only (though it conveyed a Liverpool portion as far as Crewe, and picked up *en route* for all parts of Scotland), the Midland providing the morning Glasgow service from London at 9.15, and the 10.0 a.m. from King's Cross taking passengers from London to Edinburgh. An afternoon Glasgow service ran from Euston at 1.15 p.m., and survived all through the war period, while there was an Edinburgh train from King's Cross at 2.0 p.m. till May, 1918. London and Manchester traffic was left mainly to Marylebone and St. Pancras, Euston being deemed to have a monopoly of Liverpool business, though there were a few Euston—Manchester trains. In the present emergency timetables, the Midland's route is practically ignored for through traffic, and the St. Pancras trains are routed to serve as many towns as possible. Thus the 12 hr. day train from St. Pancras to Glasgow runs *via* Nottingham, Derby, and Sheffield, failing only to include one roundabout of earlier days, when a north service ran *via* Leicester to Nottingham and reversed there, and also neglecting to go into Bradford and out again.

The old Great Central line was not affected by the 1917 minimum times, as the 2.15 p.m. from Manchester to Marylebone was taking 4 hr. 31 min. at the end of 1916, and a curious situation arose. Even in the worst period (October, 1918) the four day trains from Marylebone to Sheffield, in spite of extra stops, were occupying only 3 hr. 51 min., 3 hr. 50 min., 3 hr. 22 min. and 3 hr. 37 min., as compared with 3 hr. 43 min., 3 hr. 46 min., 2 hr. 57 min. and 3 hr. 16 min. in August, 1914—the average worsening being 14½ min.; incidentally, the Wycombe route was not abandoned, nor were the trains taken *via* Chesterfield (as they are today). Consequently, the Great Central absorbed a large share of its old competitor's traffic, for the Midland in October, 1918, had no service to Sheffield in under 4 hr. from London, and there were even times when the Great Central offered a best service from Nottingham to Northampton *via* Woodford, Byfield, and Blisworth. But as regards North and West communications, the Great Central only maintained in 1917 one through night train into and out of York, whereas the Severn Tunnel route kept up five services (three in today's timetable) and the Midland Derby and Bristol line boasted six, as against the curiously liberal provision of eight in the present emergency.

After the January, 1917, services had settled down, and the postal trains had been retimed a month later, no great changes were made till late in the autumn, when a general speed limit to 60 m.p.h. on main lines and 45 on branches was decreed and an order given to reduce passenger mileage to 50 per cent. (subsequently altered to

60 per cent.) of the pre-war total. But as the cuts had already nearly reached this figure, the various timetables issued early in 1918 were mainly to cover decelerations, though the London & North Western and Great Western made more cuts in April and the East Coast companies in May, 1918. By a curious chance, the Cheshire Lines 45 min. Manchester and Liverpool timing (with the Warrington stop) remained unaltered till January, 1918, when it became 50 min. (the Lancashire & Yorkshire and North Western 40 min. schedules had disappeared in October, 1915), and the London & South Western was still running to Exeter in 3 hr. 18 min. with Salisbury and Sidmouth Junction stops till the end of 1917, although the 2 hr. Waterloo and Bournemouth timing vanished as early as July, 1915. The last war alterations concerned the Irish traffic, daylight sailings being adopted in October, 1918, between Holyhead and Kingstown, and subsequently extended to the Stranraer—Larne and Fleetwood—Belfast routes; the Heysham—Belfast passenger sailings had all been withdrawn from March, 1916.

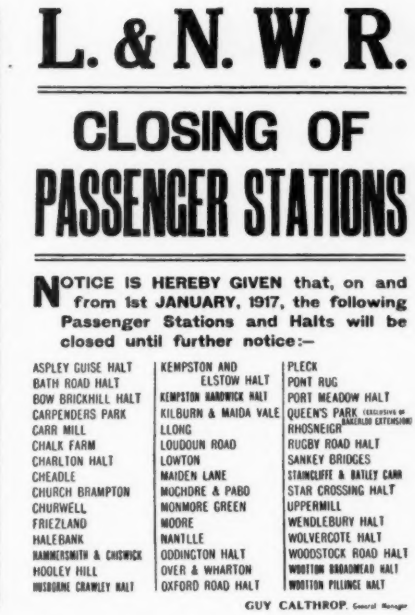

IMPORTANT RAILWAY NOTICE

TRADERS AND OTHER SEASON TICKETS.

NOTICE IS HEREBY GIVEN that, on and from 1st JANUARY, 1917, Passengers who are holders of Traders or other Season Tickets will be required to produce them in exactly the same way as holders of Ordinary Tickets, and if they fail to do so will be required to pay the full Ordinary Fare.

By Order,

London, December, 1916. THE RAILWAY EXECUTIVE COMMITTEE


L. & N. W. R.

CLOSING OF PASSENGER STATIONS

NOTICE IS HEREBY GIVEN that, on and from 1st JANUARY, 1917, the following Passenger Stations and Halts will be closed until further notice:—

ASPLEY GUISE HALT	KEMPSTON AND ELSTOW HALT	PLECK
BATH ROAD HALT	KEMPSTON HARDWICK HALT	PONT RUG
BOW BRICKHILL HALT	KILBURN & MAIDA VALE	PORT MEADOW HALT
CARPENDERS PARK	LLONG	QUEEN'S PARK (EXCLUSIVE OF BAKERLOO EXTENSION)
CARR MILL	LOUDOUN ROAD	RHOSNEIGR
CHALK FARM	LOWTON	RUGBY ROAD HALT
CHARLTON HALT	MAIDEN LANE	SANKEY BRIDGES
CHEADLE	MOCHDRE & PABO	STAINCLIFFE & BATLEY CARR
CHURCH BRAMPTON	MONMORE GREEN	STAR CROSSING HALT
CHURWELL	MOORE	UPPERMILL
FRIEZLAND	NANTLLE	WENDLEBURY HALT
HALEBANK	ODDINGTON HALT	WOLVERCOTE HALT
HAMMERSMITH & CHISWICK	OVER & WHARTON	WOODSTOCK ROAD HALT
HOOLEY HILL	OXFORD ROAD HALT	WOOTTON BROADMEAD HALT
HUSBORNE CRAWLEY HALT		WOOTTON PILLINGE HALT

GUY CALTHROP, General Manager

Two details of the general reduction in facilities on January 1, 1917

Throughout the war period, the issue of timetable books was very irregular and the lack of any uniform date for carrying out train alterations repeatedly upset connections at frontier points. Several mishaps—such as the Folkestone Warren cliff fall on December 19, 1915, and the closing of Penistone viaduct from February to August, 1916, and of Box tunnel from January to April, 1917—added to the confusion. The timetables were raised in price from 1d. to 3d. in July, 1916, but it was not till 1917 that *Bradshaw* (the price of which rose from 6d. to 1s. in January, 1916, to 1s. 6d. in April, 1918, and to 2s. in July, 1918) was used as the medium for announcing alterations. This practice was inaugurated by the Great Western in April, and copied by the London & North Western in July, 1917; the North Western resumed the issue of its own book in July, 1919, and the Great Western a year later. The Great Eastern's new train service of October, 1914, has already been mentioned, and the Waterloo timetable issues were also affected by the early stages of the suburban electrification, commencing with the Wimbledon service *via* Southfields in October, 1915. The war period witnessed also the inauguration of the Bakerloo through running over the Watford New Line, and the Manchester and Bury electrification in February, 1916, while April, 1917, saw the opening of the Great Central's Mansfield line.

As regards the general amenities of travel, the Midland, Great Central, Great Eastern, and London & South Western never discontinued all their restaurant cars; in May, 1916, the London & North Western and Great Northern, and the Great Western over routes competitive with Euston, withdrew theirs, and the North Eastern retained only two—a Newcastle and Doncaster and a Leeds and Edinburgh working. The other Great Western cars vanished with the January, 1917, reductions. Sleeping car services were maintained, but the charges were raised from 7s. 6d. and 10s. to 10s. and 15s. in September, 1916. Third class Pullmans made their appearance on the Brighton line in September, 1915. Corridor stock was never wholly withdrawn, though it vanished in 1917 and 1918 from many of the Euston and King's Cross long distance trains. Some idea of the result of this policy may be seen from the carrying capacity of the 3.50 p.m. from Euston to Birmingham and Liverpool in April, 1918, which in a tonnage of 387 (with a small proportion of lavatory stock) provided 1,196 seats (148 first and 1,048 third). Fares, as already mentioned, were raised generally by 50 per cent. in January, 1917; there was a 50 per cent. increase in Ireland from June, 1918, and season tickets were raised in May, 1918, by 10 per cent. for short and by 20 per cent. for longer distances. Most excursion bookings were cancelled at the outset from August 5, 1914 (it must be remembered that, with the penny-a-mile basic fare, a variety of short-date and long-date cheap bookings, some available by special and some by specified ordinary trains, catered for the holiday-maker); day and half-day bookings were cancelled, generally, in February, 1915, and tourist bookings in May, 1916. The London tube and local fares were raised in September, 1917, and November, 1918. But even in 1917 and 1918 great efforts were made to deal with a certain amount of holiday traffic, especially from munition workers' centres, and numbers of additional week-end leave specials were run from the various camps in Great Britain. It may be recalled, in this connection, that in June, 1918, the Lancashire & Yorkshire Railway adopted its plan for rationing and regulating travel to the Blackpool and Southport areas.

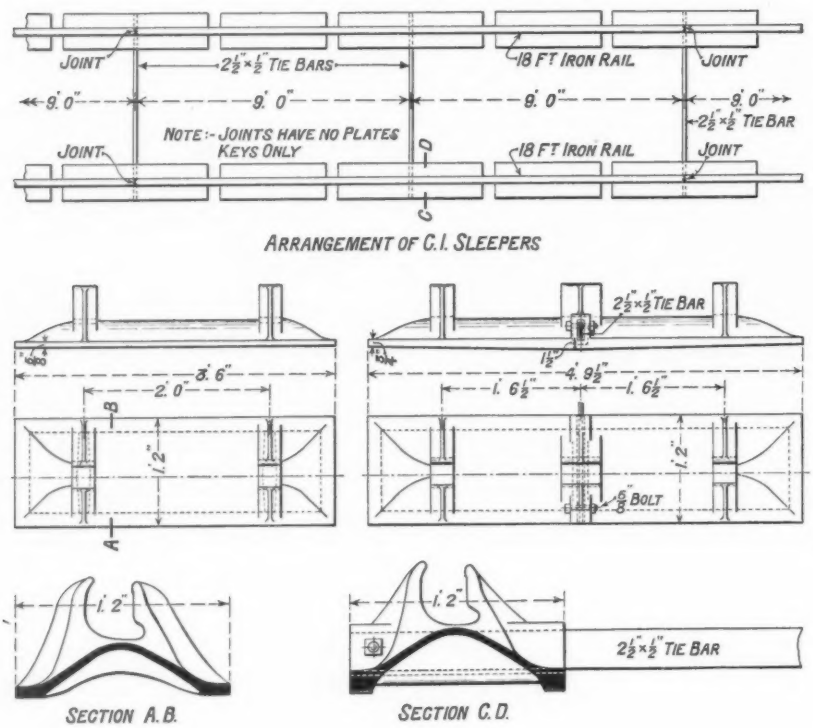
Meagre and slow though the September emergency services were, the old timetables have on this occasion disappeared so completely that we may at least hope one day for a reconstruction which, instead of reproducing the familiar features of the old services, will really treat the railways as a whole and offer to the public expresses at regular intervals, better spaced out, and avoid the duplication of mileage on parallel routes which has marked every recent acceleration scheme. Perhaps there may emerge also a class of high-speed trains—more numerous than in the past—really limited in load by a compulsory seat registration charge, irrespective of distance, as on the Coronation Scot, so as to deter short-distance passengers from using them, and operating all over the country.

EARLY SOUTH EASTERN RAILWAY PERMANENT WAY

Barlow rail relics

IN the early months of this year the Resident Engineer engaged on alterations to the locomotive depot at Bricklayers Arms, Southern Railway, unearthed some old permanent way apparently dating back to the original construction of the South Eastern Railway. Mr. George Ellson, Chief Engineer, Southern Railway, kindly afforded us facilities for examining this, and has since supplied us with the photographs we reproduce and also with some notes on this early track. It is composed of Barlow rails and sleepers found under the concrete floor of the oil store during the course of demolition work. The total length of track discovered was only 23 ft. which had been laid as part of a run-off road from the old turntable, and was connected to modern permanent way at the turntable end.

Joint Barlow-type sleeper-chair



Details of South Eastern Railway Barlow track

The two pieces of rail in each length were 9 ft. and 14 ft. long respectively, the chairs were widely spaced, and the tie rods were absent, so that it is presumed that the piece of track was not original, but that it was laid with material recovered from some other place. The general principle of the Barlow type of track was that of dispensing with sleepers, exact gauge being maintained instead by means of wrought iron tie bars at regular intervals. As in Brunel's broad-gauge track the idea was to provide continuous support on the ballast but not through the medium of longitudinal timbers. Two types of cast iron longitudinal sleeper-chairs were used, one with two sets of chair jaws and the other with three. In the middle chair of the latter a socket was provided for the tie bar and a projection between the rail ends, presumably to hold them in position. The central chair on the chair troughs was double the width of the outer chairs to hold the rail ends. No fishplates were used but only wooden keys. A description of this type of track was given in the November, 1934, issue of *The Railway Magazine*.

Rails and sleeper-chairs of old Barlow track discovered at Bricklayers Arms, Southern Railway

WEIGHTS OF RAILS

Methods of ascertaining the extent of wear of rails in the track

By R. PETERS, District Engineer, L.N.E.R., Edinburgh

IT is easier to appreciate the need of some criterion by which the limit of the useful life of a rail can be ascertained than it is to devise a means which is entirely satisfactory. It is not surprising, therefore, that many different methods have been proposed and adopted. On the one hand, since the loss of 1 lb. per yd., that is about one per cent., of the weight of the rail, may represent from, say, 8 years' service downwards, a considerable degree of accuracy is desirable, on the other hand, methods involving profiling and calculation of areas require much labour and expense in order to deal with the many scores, if not hundreds, of cases comprised in a twelve months' programme, and, moreover, they cannot be applied except by those having some notion of handling scientific apparatus and processes.

The simplest method of all to adopt is a more or less arbitrary minimum depth of rail coupled with a side wear limit gauge, such as that illustrated, any rail which fails to satisfy either condition being regarded as due for replacement. Ideally, and leaving out side wear for the moment, the criterion should be the moment of inertia of the cross-section, but, for rails of similar section and within the range of wear obtaining in ordinary circumstances, the moment is virtually proportional to the area, which itself is proportional to the unit weight, that is, in British parlance, lb. per yd. Using the latter as a basis has this further advantage that, in any particular case, the annual loss is known and the expectation of life can therefore be forecast.

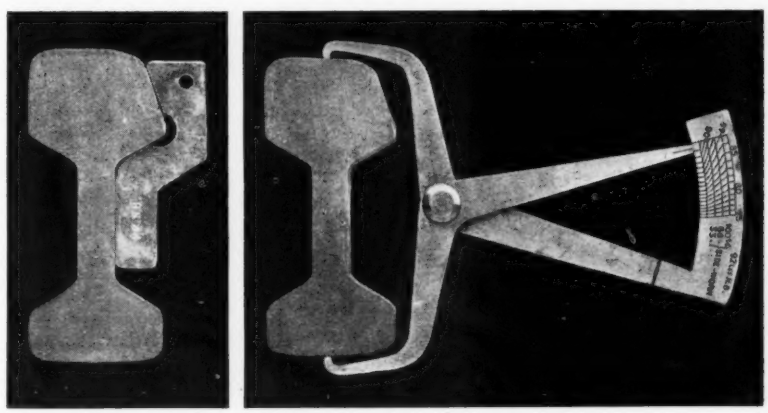
Obviously, the best way to ascertain the weight of a rail accurately is to weigh it, but this involves the expenditure of much time and labour not only in the actual operation but in transporting the apparatus and often in cleaning the rail from dirt and scale. Nevertheless, it has been done to some extent. Profiling methods, of which there are several, have an attractive appearance of accuracy, but the author has satisfied himself from careful tests that, in transferring the profile from the rail to the card or mould and then computing the area, there is room for what may be called an instrumental error of at least plus or minus one per cent., especially if the transference has to be made twice, as with some apparatus it has, before final computation. The accuracy is therefore somewhat illusory.

Genesis of New Gauges

Advantage has long been taken of the fact that, for rails of the same section worn on the surface only, and not abnormally corroded, the weight can be deduced from the depth, but when they are also side worn, more or less approximate corrections must be deducted either by reference to rules of thumb, to tables, or by using specially adjusted scales. Here difficulty arises from the fact that a loss of 1 lb. per yd. may be represented by as little as three hundredths of an inch or thereabouts, so that a scale which is not divided and read with a considerably greater degree of accuracy than it is reasonable to expect in the circumstances, may give irregular results.

Some years ago the author had callipers made of the scissors pattern which, owing to the difference in the "arm" of the opposite ends, gave an exaggerated scale of measurements not requiring excessive accuracy in dividing or difficulty in reading. These were used extensively in some quarters, and, appreciating this, the Engineer, Scottish Area, L.N.E.R., requested the author to redesign the callipers so as to be suitable for the types of rail most common in that area. Opportunity was taken of improving the callipers so that they automatically allowed for side wear. The resulting instrument is shown in the second illustration.

It will be seen that for each position of the index leg there are four superimposed scale readings representing four rails each of the same depth, but with no side wear (inner scale) full or 100 per cent. (outer scale), and intermediately 66 per cent. and 33 per cent. of side wear, respectively. The 100 per cent. scale represents side wear of the extent given by the template in the first illustration. If there had been several types of rail to deal with, the scale segment would have been made detachable and interchangeable, but as there are only two sections in extensive use in the Scottish Area the scale applicable to one of them, the 92-lb. N.B. section, is engraved on one face, shown in the photograph, and that for 95-lb. B.S. section on the other. For example, the rail here shown gives the following readings, 91½, 89, 87½ and 86½-lb. for zero, ⅓, ⅔ and full side wear respectively.



Gauge and scissors callipers for measuring rail wear

In order to facilitate manufacture and to ensure that all callipers are identical, the dividing is done from 76 master gauges. Whilst accuracy is not claimed in the absolute sense, a standardised and uniform comparison between rail and rail is provided, and, having regard to the fact that the minima adopted are more or less a matter of arbitrary choice, it is suggested that the instrument does go some way to meet requirements. These callipers were made by Alex Mathieson, of Saracen Works, Glasgow.

LIGHTWEIGHT PASSENGER ROLLING STOCK

Abstract of paper prepared by Mr. W. A. Stanier (Vice-President) for the Institution of Mechanical Engineers meeting in the U.S.A. on September 6

MR. STANIER'S paper made no attempt to compare British and U.S.A. practice because of the wide differences in operating conditions in the two countries. Variations in climate alone necessitate an entirely different practice, and the restrictions imposed by the less generous loading gauge in Britain call for an entirely different treatment. In Great Britain the maximum width over the cylinders of a locomotive is 9 ft., largely because of high platforms at the stations, and the maximum height 13 ft. 6 in., reduced very often to only 13 ft. 1 in. The maximum weight on an axle is 22 tons 10 cwt., and this limits the tractive effort of a six-coupled engine to about 40,000 lb. The maximum weight of a train is therefore not more than 600 tons, so that to enable a reasonable number of people to be carried with the comfort necessary for comparatively short runs it has been the practice to build coaches 60 ft. in length and weighing 30 tons.

In the past this was achieved by using a steel underframe and a body frame of wood with wooden panelling and roof, but for many years now the general practice has been to employ a heavy steel underframe on which is mounted a wooden-frame coach body sheathed in steel and with a steel roof. The weight per passenger seat in a third class corridor coach is about 14 cwt. Since 1932, however, serious attempts have been made to reduce weight by new methods, and there is a gradual swing from the traditional British standard form of construction. The introduction of electric welding and the availability of suitable high-tensile steels have been the corner stones of recent progress, and have permitted a freedom in design formerly unattainable.

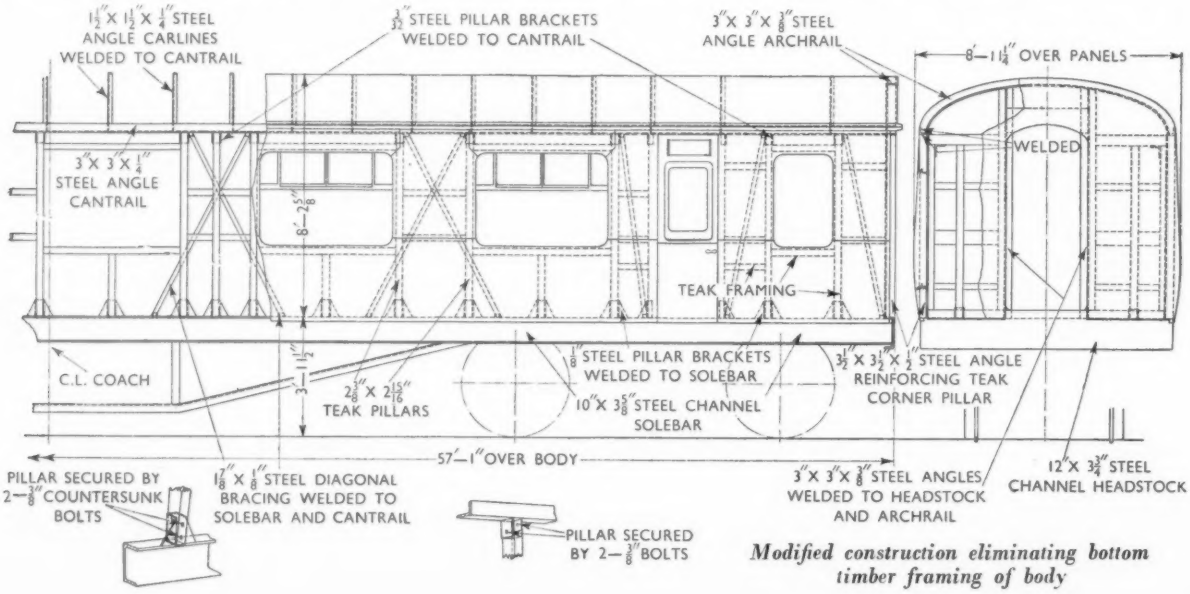
Development up to the Present

First Stage.—The first portion of the old standard design to be modified was the timber body framing. The previous practice was to use a timber floor frame bolted through rubber pads to the steel underframe. Timber pillars were mortised into the floor framing and into timber cantrails at their top ends, as shown on page 809. A series of tests carried out in 1932 showed that about 106 small parts a coach could be eliminated by improving the fastening of the pillar feet to the timber bottom sides and substituting bolts for coach screws. It was a short step thence to welding the pillar brackets directly to the solebar, thus eliminating the bottom timber framing altogether and at the same time gaining a considerable increase in strength, as shown below.

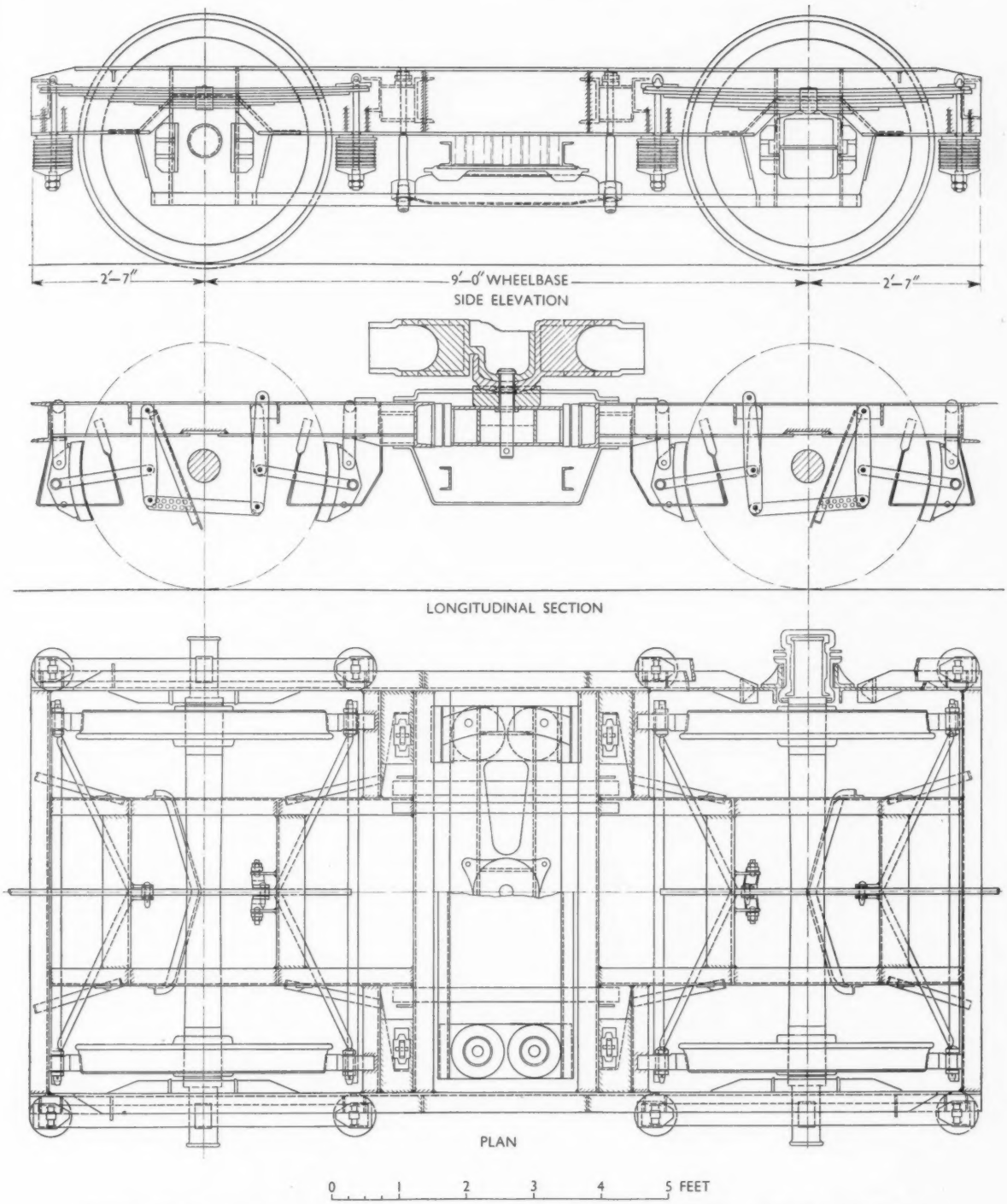
Welding

On the first coach to which it was applied, the opportunity was taken to embody all-welded underframe and bogies. The number and arrangement of the members closely conformed to riveting practice, and mild steel was used. Some advantage was, however, taken of the elimination of rivet holes to reduce some of the sections. The complete underframe and bogie are illustrated on page 809. The former showed a reduction in weight of 1,400 lb., or 8·5 per cent.; and the two bogies 840 lb., or 3·6 per cent., on riveted construction. The completed coach weighed 28 tons 16 cwt., whereas a similar vehicle of standard construction weighed 30 tons 6 cwt. Numerous vehicles have since been constructed on these general lines, including 26 first class sleeping cars, 69 ft. long and mounted on six-wheel bogies.

Second Stage.—The foregoing results represented the utmost attainable with normal materials and on the principle of a coach body simply resting on the underframe and not designed to take part of the load. In the second stage, high-tensile structural steel was introduced for underframe and bogie, and the conception of body and underframe as separate entities was partly abandoned. The underframe was designed on entirely new principles in that it was made up of light sections and truss construc


1½" X 1½" X ¼" STEEL ANGLE CARLINES WELDED TO CANTRAIL
⅜" STEEL PILLAR BRACKETS WELDED TO CANTRAIL
3" X 3" X ⅜" STEEL ANGLE ARCHRAIL
8'—1¼" OVER PANELS
WELDED
3" X 3" X ¼" STEEL ANGLE CANTRAIL
6'—2⅝"
TEAK FRAMING
C.L. COACH
3'—1½"
2⅜" X 2 15/16" TEAK PILLARS
⅛" STEEL PILLAR BRACKETS WELDED TO SOLEBAR
10" X 3⅝" STEEL CHANNEL SOLEBAR
3½" X 3½" X ½" STEEL ANGLE REINFORCING TEAK CORNER PILLAR
57'—1" OVER BODY
PILLAR SECURED BY 2—⅜" COUNTERSUNK BOLTS
1⅞" X ⅛" STEEL DIAGONAL BRACING WELDED TO SOLEBAR AND CANTRAIL
PILLAR SECURED BY 2—⅜" BOLTS
3" X 3" X ⅜" STEEL ANGLES WELDED TO HEADSTOCK AND ARCHRAIL
12" X 3¾" STEEL CHANNEL HEADSTOCK

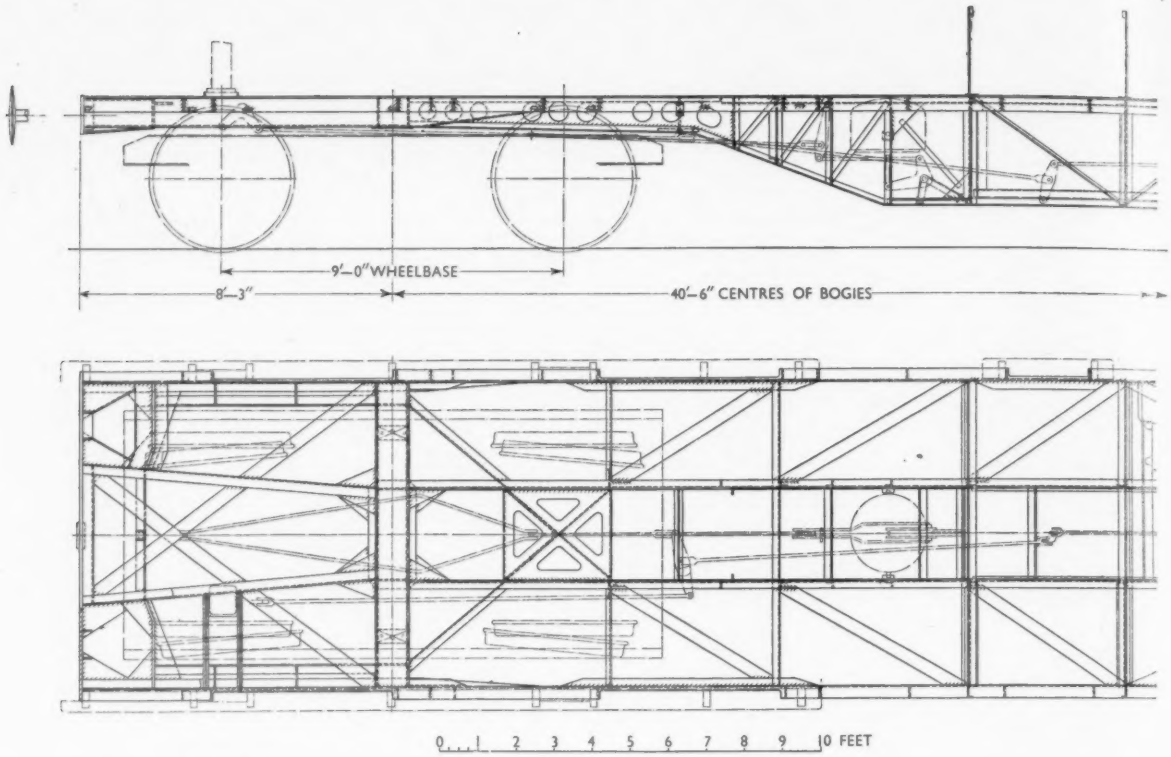
Modified construction eliminating bottom timber framing of body



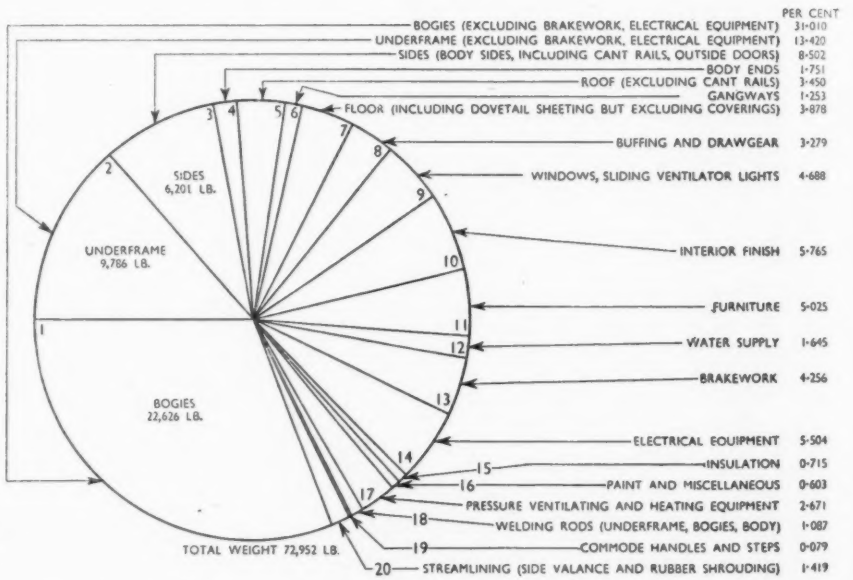
Central articulation bogie as used on twin-car and triple-car sets of ordinary stock on the L.M.S.R.

tion was employed. The load was divided between two longitudinal centre beams and the two body sides; each of the latter was designed as a complete truss. The cantrails, as they were of steel section, acted as one boom and the solebar as the other. Timber pillars were, however, retained, and were braced by light steel members to take the shear. The whole body side was treated as a Vierendeel truss, a method of design which will be dealt with in more detail later in this paper. Each of the longitudinal members, both beams and body sides, was made strong enough to carry its own share of the load without assistance from the other. Thus, although the shape of the cross-members gives the underframe a cantilever appearance, they are actually only spacers and are not designed to transfer any considerable loads from solebar to centre longitudinal or *vice versa*. Details of the underframe are illustrated on pages 808 and 809.

A high-tensile structural steel was used for the under-



Above : Girder type of underframe as used on the L.M.S.R. Each member is strong enough to carry its share of the load without the assistance of the others and the cross members are only spacers


PER CENT
BOGIES (EXCLUDING BRAKEWORK, ELECTRICAL EQUIPMENT) 31·010
UNDERFRAME (EXCLUDING BRAKEWORK, ELECTRICAL EQUIPMENT) 13·420
SIDES (BODY SIDES, INCLUDING CANT RAILS, OUTSIDE DOORS) 8·502
BODY ENDS 1·751
ROOF (EXCLUDING CANT RAILS) 3·450
GANGWAYS 1·253
FLOOR (INCLUDING DOVETAIL SHEETING BUT EXCLUDING COVERINGS) 3·878
BUFFING AND DRAWGEAR 3·279
WINDOWS, SLIDING VENTILATOR LIGHTS 4·688
INTERIOR FINISH 5·765
FURNITURE 5·025
WATER SUPPLY 1·645
BRAKEWORK 4·256
ELECTRICAL EQUIPMENT 5·504
INSULATION 0·715
PAINT AND MISCELLANEOUS 0·603
PRESSURE VENTILATING AND HEATING EQUIPMENT 2·671
WELDING RODS (UNDERFRAME, BOGIES, BODY) 1·087
COMMODE HANDLES AND STEPS 0·079
STREAMLINING (SIDE VALANCE AND RUBBER SHROUDING) 1·419
SIDES 6,201 LB.
UNDERFRAME 9,786 LB.
BOGIES 22,626 LB.
TOTAL WEIGHT 72,952 LB.

Right : Diagram showing the apportionment of the tare weight of the rolling stock forming the Coronation Scot train

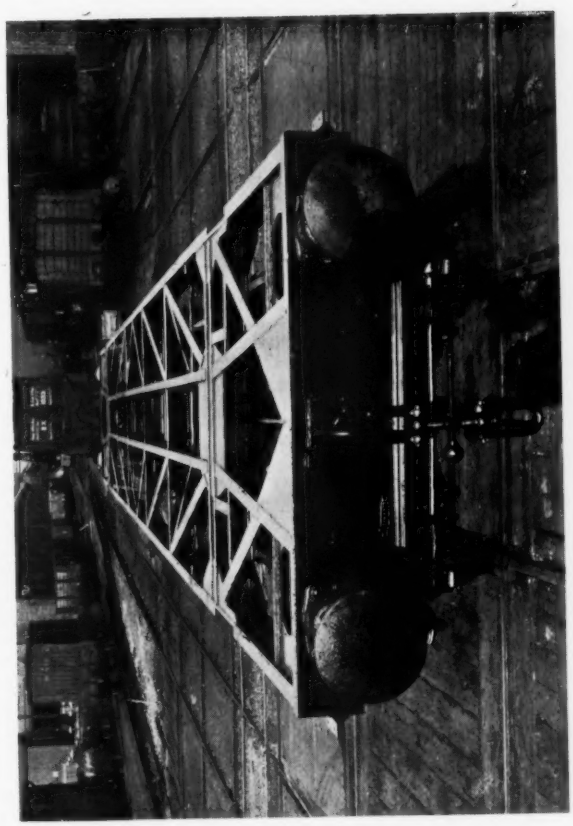
frame, with a tensile strength between 37 and 43 tons per sq. in. The same material was used for the welded bogies, which, while conforming to the standard layout, were re-designed to provide lighter sections. Axle guards were welded as an integral part of the solebar, and the bolster and swing beam were fabricated. Apart from the actual construction, other weight-saving modifications were introduced, such as " no-wash " type electric batteries, repositioned vacuum cylinders, and light alloys instead of brass for many of the internal body fittings.

The net saving in weight compared with the first and with the standard construction on a third class corridor coach of this second stage in development is shown in the following table :—

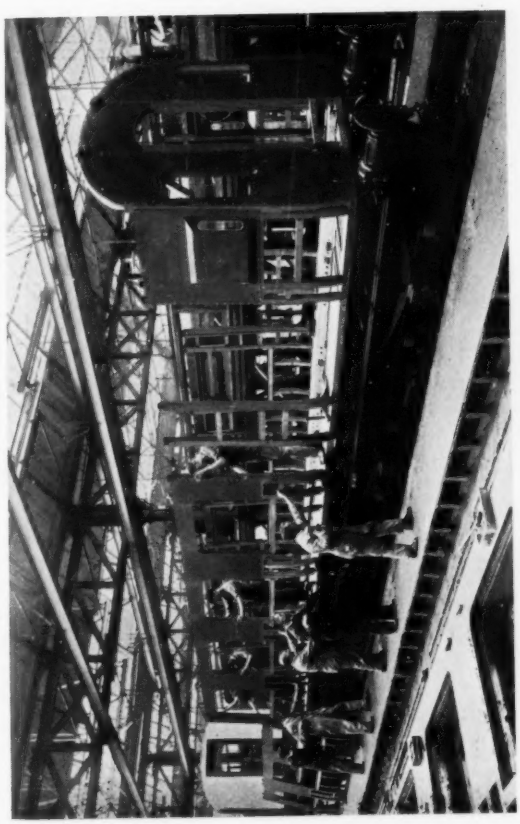
WEIGHTS OF THIRD CLASS CORRIDOR COACHES

Type of construction	Welded lightweight	Welded standard	Riveted standard
	t. c. q.	t. c. q.	t. c. q.
Complete vehicle	25 19 3	28 16 0	30 6 0
Underframe (less brakework, &c.)	4 14 3	5 4 3	5 10 2
Bogie	4 14 3	5 0 0	5 3 2
	lb.	lb.	lb.
Tare weight, per passenger	1,385	1,535	1,615

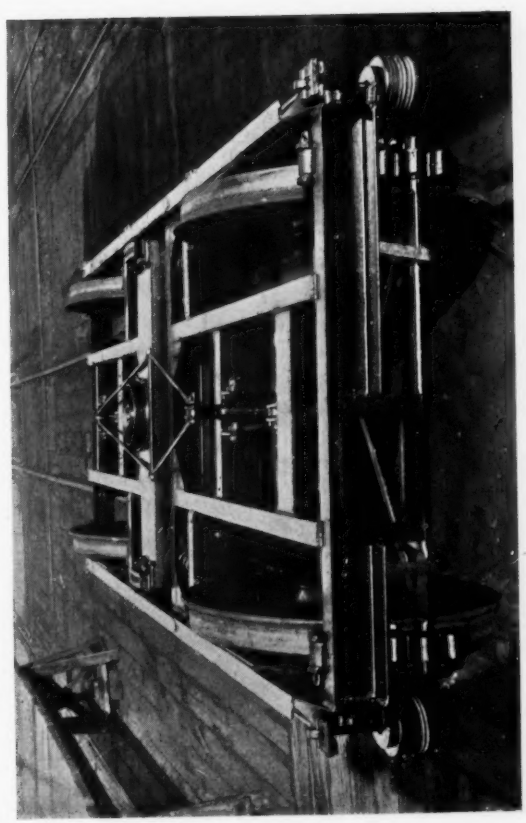
Lightweight girder type of underframe with body attached



Welded underframe of standard design



Standard passenger coach under construction



Standard welded bogie

Third Stage.—The re-designed underframe and body side and the welded construction were continued in conjunction with articulated bogies on the well-known Gresley principle. In 1937, 110 vestibule coaches were constructed, made up into ten-coach trains; the vehicles were articulated in two-car units. In addition, 33 non-corridor coaches articulated into three-coach units were built. In this case high-tensile structural steel was used only for cantrails and solebars, and the remaining parts, including the whole of the bogie, were of mild steel. Wooden pillars were still kept. The centre bogie supporting the articulation between adjacent coaches is shown on page 807, which illustrates the standard layout of carriage bogies on the London Midland & Scottish Railway. Comparison with a corresponding non-articulated vestibuled ten-car train is as follows :—

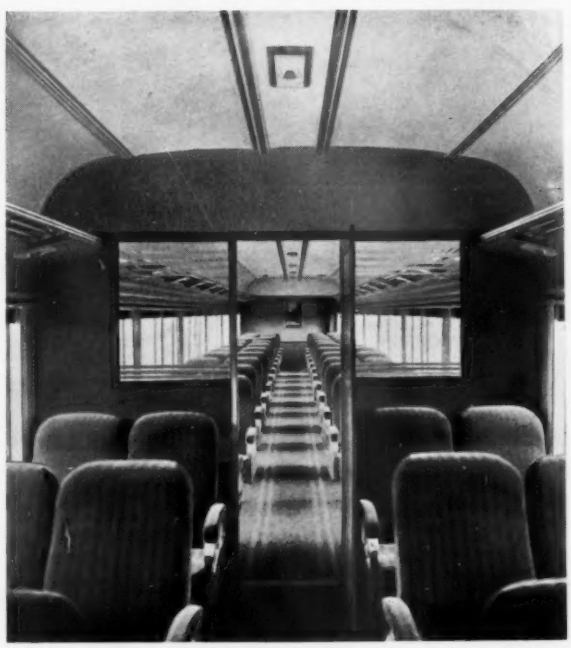
	Lightweight articulated	Standard
Total weight of ten-car train	245 tons	300 tons
Weight per passenger seat	1,037 lb.	1,167 lb.
Overall length	566 ft. 6 in.	606 ft. 8 in.

Of a total saving in weight of 18·3 per cent., it is estimated that 10·4 per cent. arises from the articulation and consequent reduction in the number of bogies. The Coronation Scot train, which has been exhibited at the 1939 World's Fair in New York, includes three two-car articulated units which conform to the design and construction outlined above. The total weight of the six articulated vehicles is 186 tons 12 cwt., whereas the corresponding vehicles of previous standard London Midland & Scottish Railway construction weigh 213 tons 3 cwt. The weight of the whole eight-car train exhibited is 262 tons 10 cwt., compared with a weight of 289 tons 13 cwt. for the standard construction. The division of weight between the various components in one of the non-articulated coaches of the Coronation Scot train is shown on page 808, and this indicates the relative importance of the methods by which further savings in weight may be made.

Mr. Stanier devoted the rest of his paper to a technical description, with illustrations, of the new electric passenger stock for the Liverpool and Southport service, which embodies the latest form of design and construction. All-steel construction and spot-welding for the body panels was introduced. The separate identity of the body from the underframe was abandoned, and the method of design tentatively adopted in the previous development was carried to its logical conclusion.

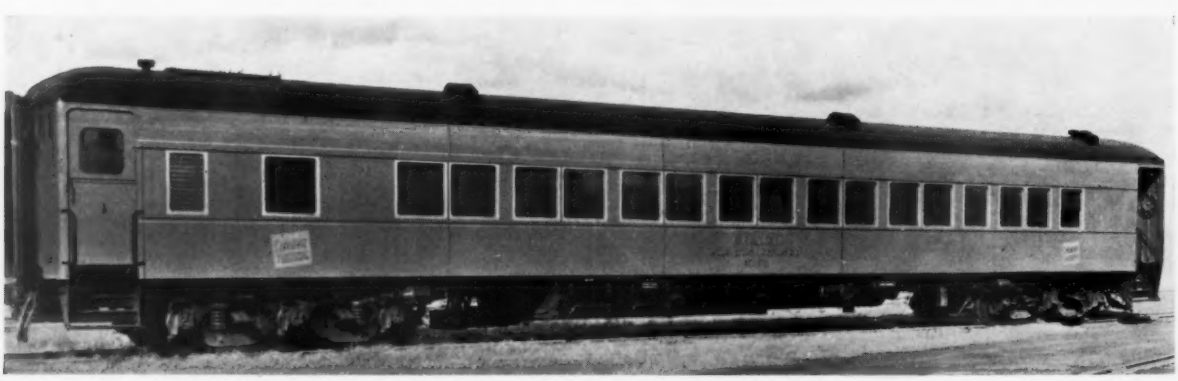
New Air-Conditioned Coaches, Canadian National Railways

THE Canadian National Railways has recently taken delivery of 50 day coaches from the Canadian Car & Foundry Co. Ltd. The air-conditioning is of the ice-actuated, Sturtevant system. Each coach is 83 ft. 3½ in. over buffers or 73 ft. 6 in. over corner posts, and the bogie centres are 57 ft. 6 in. apart. Width over side girders is 9 ft. 11$\frac{5}{16}$ in., and the weight is just 60 tons. The underframe is of built-up pressed sections, many of them of Cor-ten steel. This remark also applies to the superstructure in which Man-ten steel also is used. There are seats for 64 passengers arranged in pairs on each side of a central gangway, and Dunlopille upholstery is used. At one end is a men's lavatory and attendants' switch control and store cupboard, and at the other end are a women's retiring room and lavatory. The 12-wheel bogies have an 11-ft. wheelbase and are fitted with Westinghouse UC.4.10 air brake gear. The frames and bolsters are of Commonwealth cast steel.



Right : Interior of one of the coaches with 16-seat smoking compartment in foreground

Below : Exterior of C.N.R. first class air-conditioned coach



MODERN RAILWAY COMMERCIAL ADVERTISING

A ten-year comparison in hoarding display methods, and some notes on the effect of the war

WRITING in the December issue of the *L.N.E.R. Magazine*, Mr. C. Dandridge, Advertising Manager, L.N.E.R., says that commercial advertising revenue has increased remarkably in recent years, and that 1938 beat all records. Net receipts were nearly twice as high as at the time of amalgamation, and although it must be admitted that there has been a general rise in advertising expenditure during this period, the results, nevertheless, supply ample justification for the company's policy in taking over from contractors all branches of commercial advertising activity. Recently a good deal of energy has been devoted to improving the appearance of trade advertisements by standardising sizes so far as is consistent with revenue considerations in hard times and by introducing a standard panelling system where architectural features permit. The enamelled iron plate is still with us, partly because it is peculiarly suited for smoky and exposed positions, but it is being brought under control, and every traveller must have noticed the disappearance of extraordinary collections of shapes, sizes, and colours.

The advent of war has, of course, convulsed the world of advertising, and the L.N.E.R. has been obliged to release from their contracts many firms whose services and commodities have either disappeared as such or whose businesses have suffered severe interference. Other commercial undertakings have cut down their commitments meantime, but it is already clear that advertising on railways has not been subjected to such sweeping reductions as have been sustained by competitive publicity media, despite lighting restrictions and altered train services. Mr. Dandridge says there are signs that the internal trade of the country is quickly adjusting itself to war conditions and that fresh advertising will be required to assist in the re-education of the purchasing public.

Left: Odd shapes and sizes in an advertising display of 1929

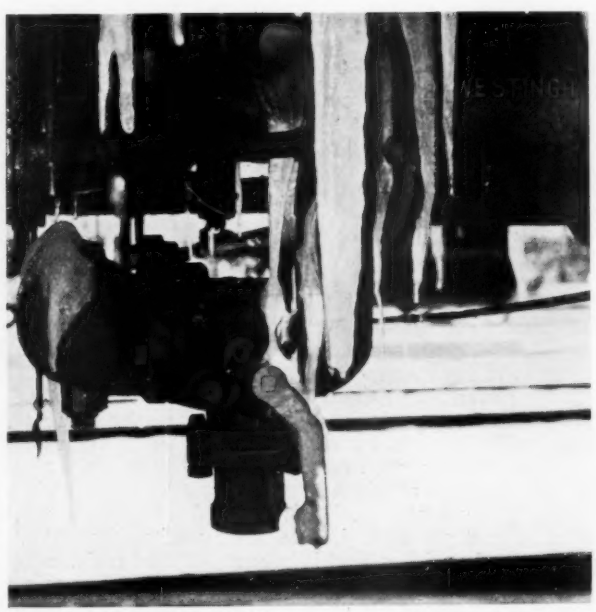
Right: Standard panels on a similar wall in 1939

ATLANTIC LEASED LINES.—As previously announced, this company's shares in the Cleveland & Mahoning Valley Railway have been sold, and the net purchase price of £1,963,208 has been received in London. It is proposed to ask the stockholders to set aside £21,000 out of surplus profits to compensate directors and staff for loss of office. For this an alteration of the articles is necessary, and meetings to effect this and to place the company in liquidation have been called for January 3. It is hoped to pay off the debentures and to make a first payment of at least 100 per cent. on account of the ordinary stock.

POLISH RAILWAY SCENES

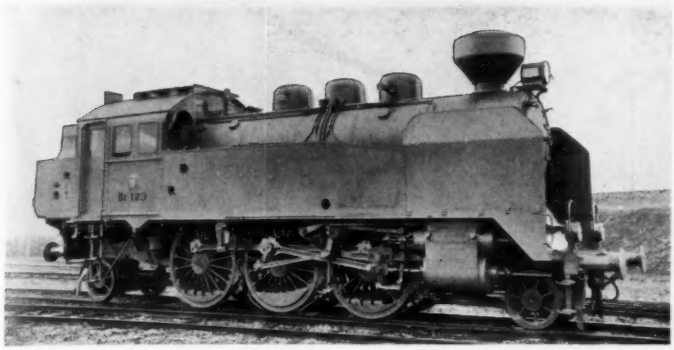
Above: The bridge over the Vistula forming part of the line between the Central and the East stations at Warsaw

Left: A typical scene in Poland: the signal box at Czestochowa, Polish State Railways

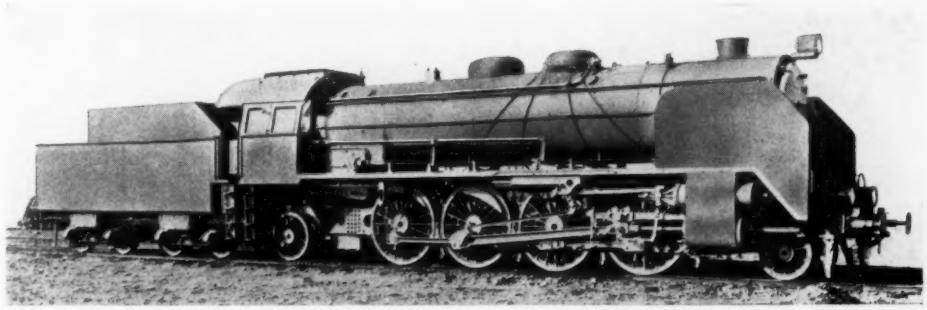


Left: Goods train on trial trip to test new Westinghouse brake equipment, Polish State Railways. Right: Triple valve of Westinghouse brake, as recently fitted to all goods trains in Poland by the Westinghouse Brake & Signal Co. Ltd. This picture gives an idea of the severe weather conditions encountered

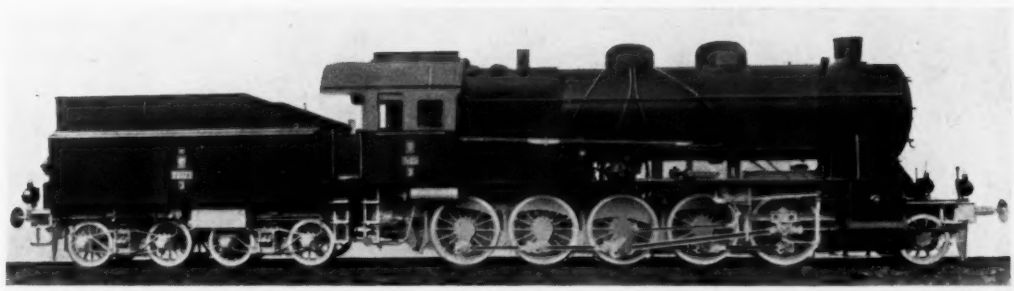
Examples of Modern Polish Locomotive Practice, all of the Two-cylinder Simple Type



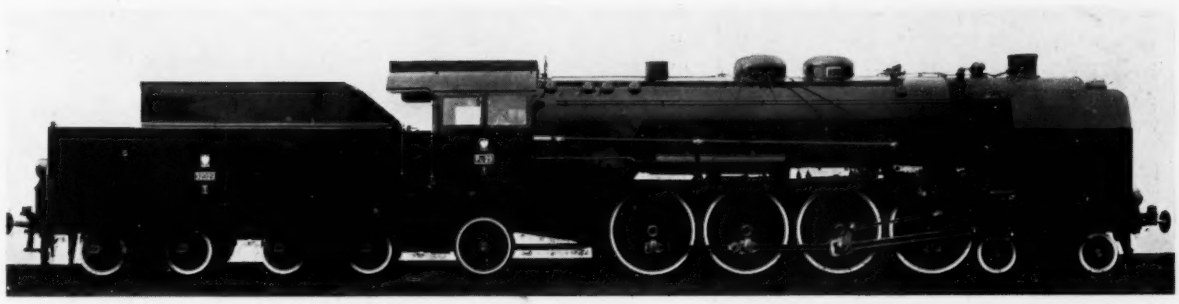
Standard 2-6-2 tank locomotive. This particular example has a spark-arresting chimney for burning wood fuel



2-8-2 *express locomotive*

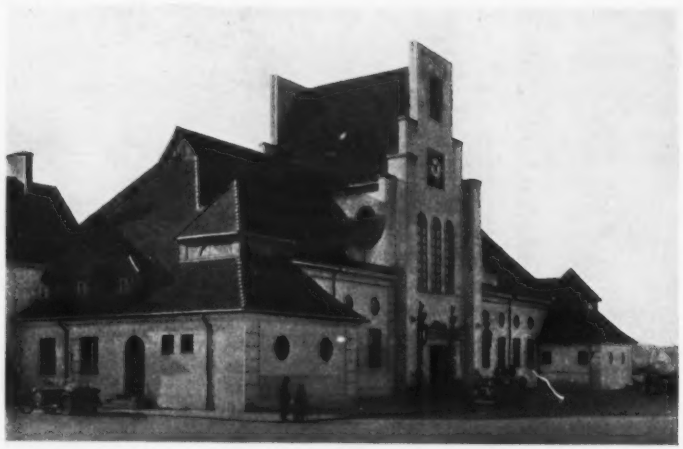


2-10-0 *goods locomotive, as used on the Silesia-Gdynia line*



4-8-2 *express locomotive, for heavy main-line traffic*

Gdynia harbour with the marine station in the foreground



Gdynia railway station

The old Vienna terminus at Warsaw, demolished to make way for the new Central through station with tracks below street level, 1935

Radziwillow, a typical wayside station on the Polish State Railways

Some Polish Stations

RAILWAY NEWS SECTION

PERSONAL

R.C.H. Conference

Mr. C. Grasemann, Public Relations and Advertising Officer, Southern Railway, has been appointed Chairman of the Advertising & Public Relations Committee for the year 1940.

Colonial Office Appointments.

The Secretary of State for the Colonies has recently approved the following appointments:—

Mr. C. J. Greenway, Administrative Assistant to be Assistant Traffic Officer, Nigerian Railway.

Mr. A. Lowe, Works Manager, to be Locomotive, Carriage and Wagon Superintendent, Jamaica Government Railway.

G.W.R. Appointments

The following appointments are announced by the company:—

Mr. T. C. Sellars, Assistant District Traffic Manager, Oswestry, to be District Traffic Manager, Oswestry.

Mr. A. Higginson, Chief Clerk, District Traffic Manager's Office, Plymouth, to be Assistant District Traffic Manager, Oswestry.

Mr. E. T. Davies, Divisional Engineer, Taunton, to be Principal Assistant to the Chief Engineer, Paddington.

Mr. C. H. T. Morgan, Assistant, Chief Engineer's Office, Paddington, to be General Assistant to the Chief Engineer, Paddington.

Mr. C. E. Shackle, Assistant, Chief Engineer's Office, Paddington, to be New Works Assistant to the Chief Engineer, Paddington.

Mr. F. Holland, Assistant Divisional Engineer, Taunton, to be Divisional Engineer, Taunton.

Mr. E. C. Cookson, Assistant Divisional Engineer, Paddington, to be Divisional Engineer, Newport.

Mr. T. T. Mead, Assistant Divisional Engineer, to be Acting Divisional Engineer, Newport.

We regret to record the death, on December 9, of Sir Reginald Isidore Robert Glancey, K.C.S.I., K.C.I.E., B.A., who, for a short time after his retirement from India in 1930, was Chairman of the board of H.E.H. the Nizam's State Railway. Born in 1874, he was educated at Clifton and Christ Church, Oxford, and went out to India in the I.C.S. in 1896. In 1901 he was chosen to go to the newly-formed North West Frontier Province, and then began his distinguished service in the Political Department, first on the frontier and then in Hyderabad State, leading up to his appointment to Baroda as British Resident in 1922. Two years later he became Agent to the Governor-General in Central India. After retiring, he became a Member of the India Council in 1931, and was advisor to the Hyderabad delegation to the Indian Round Table Conference of 1930-31. He was reappointed to the council in 1936, and on its abolition in the following year became a Statutory Advisor.

Mr. D. C. Coleman, a Vice-President of the Canadian Pacific Railway, completed 40 years of service with the company on November 4. Mr. Coleman was born at Carleton Place, Ont., on July 9, 1879, and entered the Assistant Engineer's office of the C.P.R. in 1899. After wide experience over all parts of the system, Mr. Coleman was appointed Vice-President, Western Lines, Winnipeg, in October, 1918. He became a Vice-President of the company at Montreal in 1934, and now has jurisdiction of all lines of the Canadian Pacific Railway.

We regret to record the death of Sir Arthur Ambrose Hall Harris at Victoria, B.C. Sir Arthur, who was born on October 15, 1854, joined the Grand Trunk Railway of Canada in 1874 and remained there until 1902, when he secured an appointment with the Canadian Pacific Railway. In the last war, Sir Arthur was made Director of Overseas Transport to the Canadian Government and representative in Canada of the British Ministry of Shipping. He held those posts until 1918, when he became Director-General of the British Ministry of Shipping in Canada. It was at this time that he was created a K.B.E.

Some of those present at the Institution of Locomotive Engineer's luncheon (see page 816). Sir Nigel Gresley will be recognised on the left of Mr. O. V. Bulleid, President, who is standing

The Canadian Pacific Railway announces the election as Directors of Mr. Eric W. Hamber and Mr. G. Blair Gordon.

Mr. John Craig, Chairman and Managing Director of Colvilles Limited, and Mr. J. M. Mitchell, a Director of James Nimmo & Co. Ltd., have joined the board of James Dunlop & Co. Ltd.

Mr. Arthur Sylvester Matthews and Mr. James Harold Jubb have been elected Directors of Turton Bros. & Matthews Limited.

Mr. Wilfred A. Matthews, formerly Chairman and Managing Director of Turton Bros. & Matthews Limited, whose death we announced in our issue of October 20, left estate valued at £52,417 (net £51,236). Mr. Matthews was the father of Sir Ronald Matthews, Chairman of the London & North Eastern Railway.

In 1920 Sir Arthur retired from active business.

The L.N.E.R. announces that Mr. E. O. Wright, stationmaster, Doncaster, has been appointed stationmaster, Sheffield (Victoria).

We regret to record the death on December 15 of Mr. William Longbottom, at the age of 85 years. Mr. Longbottom joined the staff of the London & North Western Railway as a boy and remained with the company until his retirement from the position of Goods Superintendent in 1914. Mr. Longbottom's father was sometime Engineer of the North Staffordshire Railway and his family has been associated with railways since the days of George Stephenson.

The Institution of Locomotive Engineers

Opening general meeting and presidential address

The opening general meeting of the Institution of Locomotive Engineers for the current season was held at the Waldorf Hotel, London, on Thursday, December 14, when the President, Mr. O. V. S. Bulleid, delivered his presidential address. This was preceded by a luncheon, arranged in order to give the members an opportunity of meeting one another, bearing in mind that it may not be possible to hold the annual institution dinner next spring. Over 100 members attended the luncheon and the meeting which followed, including:—

Messrs. W. A. Agnew, H. H. Andrews, J. Clubley Armstrong, R. M. E. Ashworth, E. S. Aslett, Major S. L. Baister, Lt.-Colonel R. G. Bamford, Messrs. W. J. Bassett-Lowke, J. W. Beaumont, J. E. Beckett, A. R. Bell, Comdr. W. T. A. Bird, Messrs. P. W. Bollen, D. C. Brown, O. V. S. Bulleid (President), E. Bulman, D. Burnie, A. Campbell, Major K. Cantlie, Messrs. D. R. Carling, A. C. Carr, J. Clayton, C. S. Cocks, Lt.-Colonel F. R. Collins, Messrs. D. F. Cooper, H. P. R. Coveney, H. W. Crosthwait, E. S. Cox, A. S. Davidson, A. L. B. Dawson, A. Devon, J. P. A. Drewry, R. J. Drury, W. S. Edwards, H. B. Emley, C. E. Fairburn, C. Fawcett, Major C. Fullerton-Tofts.

Mr. M. H. Gabb, Engr.-Comdr. H. V. Gaud, Messrs. F. Gibbins, A. H. Gilling, R. K. Glascodine, R. T. Glascodine, W. S. Graff-Baker, E. Graham, H. Gresham, J. H. Gresham, J. N. Gresham, S. R. Gresham, Sir Nigel H. Gresley, Messrs. W. H. Grieve, R. H. Hamilton-Wickes, Major H. A. Harrison (Secretary), Messrs. C. A. F. Hastilow, C. G. Hatherly, F. J. Hemming, H. Holcroft, W. G. Hornett, E. O. Ievers, A. C. Illston, F. B. Illston, J. A. Kay, E. McI. Keay, W. Kelway-Bamber, A. J. D. Kitson, G. L. Kitson, Chas. S. Lake, P. D. La Touche, L. J. Le Clair, M. Lewis, E. E. Lloyd, T. Lunt.

Messrs. R. M. Macfarlane, R. G. MacIver, J. Pelham Maitland, R. E. Marks, F. Mason, J. Maudslay, A. W. M. Mawby, R. D. Metcalfe, G. H. Mills, L. A. Mohan, N. H. Morris, J. H. Moss, H. C. Moxon, G. R. Nicholson, B. W. Palmer, J. Palmer, C. R. Pasley, K. F. Pearson, K. R. Pearson, R. T. Pemberton, G. Pettigrew-Smith, S. A. R. Phelps, F. D. Playford, T. Potter, A. L. C. Purr, V. P. Rawlings, J. W. H. Rea, A. Richardson, R. A. Riddles, J. L. Riordan, M. D. Robinson, J. D. Rogers, Mr. C. R. Salmon, Capt. M. K. F. Saunders, Major E. I. Scott, Messrs. G. H. Sheffield, G. S. Simmons, J. G. Smith, J. C. Spencer, W. A. Stanier.

Capt. F. Theakston, Messrs. J. H. Thom, L. A. Thorman, E. D. Trask, J. S. Tritton, M. W. Tutt, C. B. Unwin, J. F. B. Vidal, Capt. H. Vivian, Messrs. C. C. H. Wade, W. J. Wakley, A. J. R. Walter, A. F. Walters, W. L. Watson, Major Bruce G. White, Messrs. R. H. Whitelegg, A. E. Williams, W. Cyril Williams, H. Wilmot, and J. B. Woodman.

The first business of the meeting was to accept 62 further applications for membership. The retiring President, Mr. W. A. Stanier, then introduced his successor, Mr. O. V. S. Bulleid.

Mr. W. A. Agnew proposed a vote of thanks to Mr. Stanier for his services during his term of office as President. In seconding the motion, Mr. J. W. Beaumont recalled that Mr. Stanier had visited India during his term of office—the only occasion, he thought, on which an overseas branch had been visited by a President, and he was sure that the visit had had a very good effect.

The President in opening his address stated that had peace prevailed he would have taken for his subject rail traction as exemplified on the Southern Railway. In the existing circumstances and at a meeting of that nature this could not, however, be adequately dealt with, and as an alternative he proposed to review matters of a more general nature. He first made a survey of the position and prospects of the institution under war conditions, emphasising that its work must be continued, although evening meetings would not be possible owing to blackout difficulties. The institution *Journal* thus became an even more important link between members, and in view of this the council had decided that the *Journal* should be issued as frequently as possible and that papers should be printed even though they had not been discussed. Mr. Bulleid then passed to a survey of railway activities in wartime. "The organisation of the railway services in wartime," he said, "was considered long before the outbreak of hostilities, and preparation made to meet all foreseeable contingencies. The rolling stock was kept in good repair, the tracks properly maintained, and stores accumulated within reasonable limits by the companies themselves. The lessons of the last war were remembered and preliminary arrangements made for the control of the railways in wartime.

"The Railway Executive Committee* is a co-ordinating committee to a large extent, and decides all questions of policy. In turn, this committee appointed fourteen sub-committees, as follow: Solicitors, Goods Managers, Passenger Superintendents, Mineral Managers, Operating Superintendents, Accountants, Statistical, Staff, Civil Engineers, Mechanical and Electrical Engineers, Signal and Telegraph Engineers, Stores, Surveyors, Road Transport. The chairmen are selected from the officers of the various railways.

"These sub-committees deal with all matters referred to them by the Executive Committee, as well as questions of general interest raised by individual members which it is felt should be handled on uniform lines. The decisions of the sub-committees are subject to the approval of the Railway Executive Committee, and orders given by the latter are carried out by the respective General Managers, who, whilst seeing that such orders are made effective, retain in all essentials the managerial operation of the railways with freedom in local matters.

"The sub-committee in which we are most interested is the Mechanical and Electrical. This committee is under the chairmanship of your Past-President, Sir Nigel Gresley; its other members are: Mr. W. A. Stanier, Mr. C. E. Fairburn, L.M.S.R.; Mr. W. S. Graff-Baker, L.P.T.B.; Mr. H. W. H. Richards, L.N.E.R.; Mr. C. E. Collett, G.W.R.; Mr. A. Raworth, and your present President for the Southern Railway. I should like to make it clear that this sub-committee has no executive authority over its members as, so far as each railway company is concerned, each Chief Mechanical and Electrical Engineer remains responsible to his General Manager for his department.

"We locomotive engineers know that a prosperous railway industry—one of the greatest of the country—means prosperity to many towns and trades and to the 600,000 people directly employed by it. It is no exaggeration to say that the country cannot be prosperous if the railways are not. The services rendered to the country in peacetime are great: the assistance given would have been greater in both men and material but for the economies imposed on the companies in peacetime by the failure to ensure equitable treatment: we may hope this will not be allowed to occur in the future."

In concluding, the President, remarking that many members of the institution were now serving in the Armed Forces, said "The reputation of the institution is safe in their hands; they will show the versatility, resourcefulness, and phlegm expected of the locomotive engineer. They have our best wishes for success in all their undertakings and a safe return."

Sir Nigel Gresley, in proposing a vote of thanks, confessed that he was a little disappointed in that, although the President had told them something about the functions of the Railway Executive Committee, he had said nothing at all about their own particular subject, that of the locomotive. He had made a reference to the blackout, but the blackout really did not affect the locomotive engineer in certain respects. He had in fact always been accustomed to run in a blackout. When it came to motor car drivers it was a different matter. They were assisted by a white line along the middle of the road, and Sir Nigel told the story of a pessimistic driver who, after being told of the advantages of the white line, which he had only to follow in order to drive in comfort, said "Yes, I daresay that is all right, but what shall we do when it snows?"

Mr. J. S. Tritton seconded the vote, which was accorded by acclamation.

The President in reply said that he would have liked to have talked about locomotives—who would not?—but it would not have been a very fitting opportunity. He hoped that a dinner-meeting would be held before they were very much older, when it might be possible to come back to that subject. He announced that the next meeting of the institution would probably be held in February.

* The constitution of this committee was given in THE RAILWAY GAZETTE of September 18

TRANSPORT SERVICES AND THE WAR—17*

Minister of Transport's tribute to railways in wartime—Christmas travel arrangements —Brighter Southern Railway stations—London tube protection works; Kennington-Strand section re-opened—Speedier release of wagons

Both during the months before the declaration of war, and also since the outbreak of hostilities, we have recorded in THE RAILWAY GAZETTE all that might be said prudently about the extensive preparations designed to secure the continuance of essential British transport services even in the most adverse circumstances. As many of these plans have not so far been brought into prominence in the daily press by being needed for immediate use, travellers and traders have been apt to resent the resultant irksome curtailment of normal facilities and at times to impute blame, quite unjustly, to the railway companies and other transport authorities. We therefore welcome the broadcast speech by Captain Euan Wallace, the Minister of Transport, on Wednesday evening of last week, December 13, in which he outlined in popular language something of what has been, and is being, done to protect transport—the lifeblood of every civilised community. As Captain Wallace pointed out, the first danger against which we had to guard when war broke out was the chance of our transport being tied up by enemy action. There was every likelihood that hostilities would begin with a massed attack from the air on our docks, railways, bridges, and important road junctions; and for many months before September 3 the Ministry of Transport was perfecting plans to meet this threat.

Some ports were obviously more vulnerable than others, and a scheme had been devised by which certain homeward-bound ships were immediately diverted to safer harbours. This machinery is still in daily operation, but the authorities try to interfere as little as possible with the normal destinations of merchant ships. There was also the possibility of damage by lucky hits on a railway junction, a rail or road bridge, or a main trunk road, where immediate repair is vital. In many parts of the country road material is readily available from quarries, slag heaps, and so on. Where this is not the case dumps have been formed, and immediately the all-clear signal is given, local authorities can set to work to get into working order any road that may have been smashed up. To arrange for the rapid repair of bridges was more difficult, but bridge parts, specially designed to be interchangeable for varying spans and capable of very rapid erection, have been accumulated at suitable centres. Men ready trained to put them together at high speed are available. The railways have made similar arrangements for their bridges and permanent way.

But, as Captain Wallace observed, the main task of the Ministry of Transport is something much more positive than the repair of damage caused by enemy action; it is to ensure that the transport system of the country is so organised that, besides doing its ordinary work, it can carry the additional heavy burdens thrown upon it by the war. Accordingly, he outlined what had been done in bringing the four main-line railway companies and the London Passenger Transport Board under Government control; in establishing the Railway Executive Committee; in placing the working of each of the principal ports in the hands of a Port Emergency Committee (made up of representatives of the port authority, shipowners, traders, road, rail, and canal transport, and the trade unions concerned); and in appointing an advisory committee to assist the Minister in making the best use of the canal system. At the beginning of the war, he said, our railways were faced with formidable tasks—the evacuation of 1,300,000 women and children from some of our largest cities, the mobilisation of the Fighting Services and the transportation of the British Expeditionary Force. In addition, they have to handle a greatly increased volume of goods traffic arising out of the war effort, and all this has to be carried out under conditions of blackout which are a serious handicap to railway work in general, and more particularly to the very important night work in goods yards. Captain Wallace added: "The railways are carrying on under conditions of considerable strain and they are entitled to every credit for the admirable way in which they are playing their part in these difficult times."

Southern Railway Christmas Trains

The Southern Railway is running nearly 200 additional special trains from London stations to South Coast resorts and other parts of the system between Wednesday last, December 20, and Sunday, December 24. The extra trains include 45 for Portsmouth and Isle of Wight; 27 for Bournemouth; 9 for the West of England; 64 for Brighton, Hastings, Eastbourne, Worthing, &c.; and 41 for the Kent Coast. As we stated last week, these trains leave London only during daylight. No holiday express is timed to leave after 5 p.m. owing to the difficulties imposed by the blackout.

L.M.S.R. Christmas Trains

Planning for a Christmas railway rush on a big scale, the L.M.S.R. has made arrangements for running throughout the system special parcels trains for the conveyance of Christmas gifts, far in excess of previous experience. These parcels specials began to run on December 15 and will continue in daily "waves" until Christmas Eve; in view of wartime conditions the L.M.S.R. appealed to the public to despatch both rail parcels and parcels post as early as possible, so as to take advantage of these special services. Included in these parcels trains are over 100 in each direction booked to run to and from London, in addition to traffic conveyed by strengthened ordinary services. Throughout the Christmas holiday from December 22 to 27, the L.M.S.R. will be running 478 extra passenger trains (in addition to the parcels services just mentioned), of which 101 will start from London, and 108 will run to London.

L.N.E.R. Christmas Travel Plans

During the period December 15 to 31 the L.N.E.R. is running 400 extra trains to cater for Christmas travel; of these 163 are provided with fully-lighted restaurant or buffet cars. A fleet of 110 restaurant cars and 35 sleeping cars is being employed, all equipped with full white lighting. Over 200 additional trains are running between King's Cross, the West Riding, the North of England, and Scotland; and 172 extra trains between Liverpool Street and Clacton, Ipswich, Norwich, Yarmouth, Cambridge, Ely, and other East Anglian towns. Additional trains from Marylebone include four expresses to York, Darlington, Stockton, and Newcastle on December 22 and 23. To ensure prompt deliveries of Christmas parcels the L.N.E.R. is running 90 special parcels and parcels post trains to and from London, and cartage facilities are being strengthened. Seven North Country stations—Darlington, Harrogate, Hull, Newcastle, Scarborough, Tynemouth, and York—are having illuminated Christmas trees.

G.W.R. Christmas Arrangements

The peak of the G.W.R. Christmas holiday rush will be reached on Friday and Saturday, December 22 and 23, when over thirty additional expresses will leave Paddington for the West of England, South Wales, the Midlands, and the North. Famous expresses, suspended since the outbreak of war, are being reinstated for the holiday. These include the 12 noon

* Previous articles in this series have been "Transport Services and the Crisis," Sept. 1, p. 334; and "Transport Services and the War," Sept. 8, p. 358; 15, p. 382; 22, p. 410; 29, p. 442; Oct. 6, p. 467; 13, p. 495; 20, p. 525; 27, p. 557; Nov. 3, p. 589; 10, p. 617; 17, p. 649; 24, p. 681; Dec. 1, p. 714; 8, p. 746; and 15, p. 781

Torbay Express, 3.30 p.m. " Honeymoon Express " and the 9.50 p.m. to the West of England; the 10.45 a.m. and 3.15 p.m. to Cheltenham and Gloucester; and the 4.5 p.m. to Birmingham and the North. Christmas fare will be served in all the restaurant cars during the holiday and every main-line corridor express as well as many of the semi-fast trains running between Paddington and all parts of the system will be equipped with white reading lights. For over a week Christmas special trains have been running from Fishguard to Paddington with Irish turkeys and poultry; it is expected the tonnage this year will exceed that of 1938. Heavy Christmas parcels traffic is expected to result in more than a quarter of a million parcels being handled at Paddington alone.

Christmas Leave Transport

Christmas leave for the fighting services began on December 18, and elaborate preparations were made by the War Office and the Railway Executive Committee to ensure smooth working. One rehearsal which attracted public attention took place at Victoria station on the evening of December 12 when 366 guardsmen, watched by staff officers, acted as if they were on leave from France. About 7.20 p.m. they left by train from platform 2 (on the Chatham side at Victoria station, Southern Railway) and " arrived " at platform 8 at 7.30. They stepped in full battle dress from darkened carriages, and loud-speakers on the platform advised the men when they were " due to return to duty." Army officers and railway officials sorted out the men and directed them to their imaginary trains and buses.

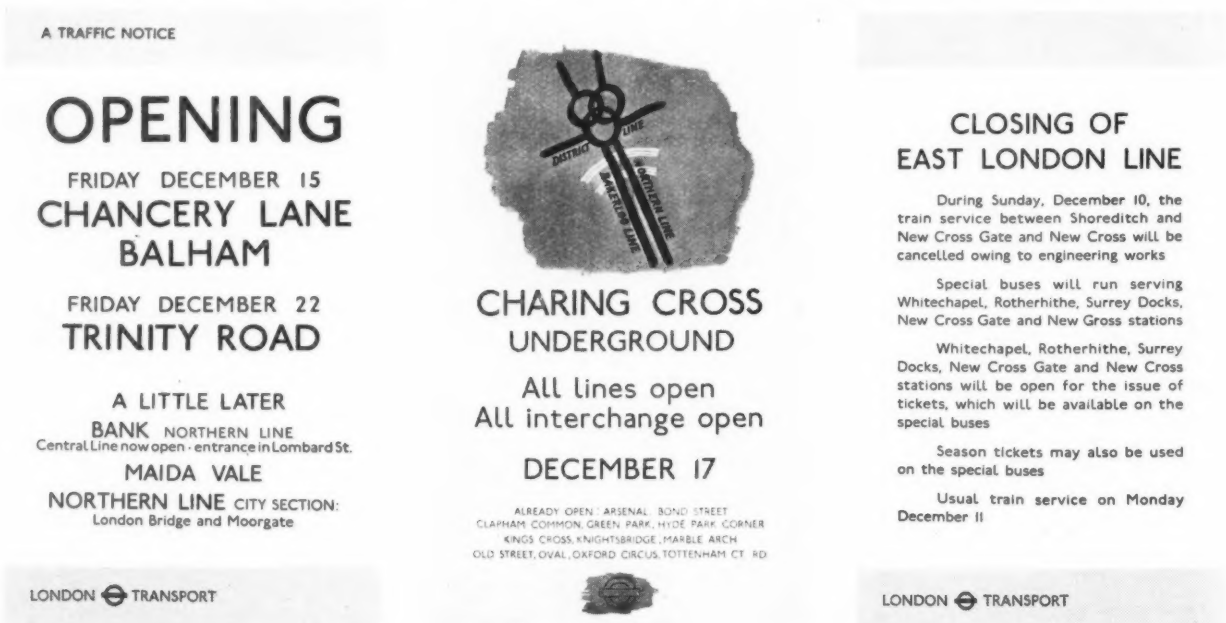
Officers and men of the B.E.F. coming home on leave are provided with a printed 8-page booklet entitled " Combined Leave Pass and Railway Tickets." These booklets, white for officers and green for other ranks, have been prepared by the Railway Executive Committee in co-operation with the War Office, with the object of ensuring that homecoming soldiers have the minimum of trouble with leave passes, embarkation tickets, and railway tickets. The booklets cover authority for leave embarkation, sea and rail travel for both the homeward and return journey, and are also available, where necessary, for journeys across London by Underground trains. Army headquarters has arranged that officers of the Army Pay Corps are on duty in every leave train and make an advance of pay in sterling so that soldiers have enough money to reach their homes; when they leave France they have only French money. In the case of a man living in an inaccessible part of the country the R.T.O. is able to issue a ticket entitling him to free accommodation in London until the train leaves for his home. Similarly, men returning to London the day before their leave expires will be provided with free accommodation until their train is due to take them back to their stations. Special boat trains connect with the arrival at English ports of leave ships. All leave trains are dealt with in the priority class by the railways, and in order to give the men the maximum time at home, numbers of trains are making cross-country journeys direct to home stations in different areas. Facilities for refreshments on board the vessels and also at canteens at the ports of arrival and at stations *en route* have been arranged. Telegraph offices have been opened at the ports of arrival for the use of leave personnel.

For militiamen and troops in England, the Railway Executive Committee arranged for special railway representatives to visit camps and depots several days before leave was due to begin, to supply tickets, timetables, and travel advice to the men. Many of these railway representatives were soldiers themselves in the last war, and thus well acquainted with soldiers' travel needs. Full travel arrangements were also made for sailors, airmen, and members of the A.T.S. and other women's organisations proceeding on Christmas leave.

London Underground Flood Protection Work

The resumption of normal traffic at the Charing Cross Underground stations on Sunday last, December 17, marked the virtual completion of the large programme of flood protection work undertaken by the London Passenger Transport Board, in co-operation with the Ministry of Transport. Of the 51 stations at which it was necessary to take precautionary measures, 19 were closed on September 1, and all but two are now in service again. Two were reopened on November 15, and others have been opened at intervals since, as recorded in these columns. Chancery Lane and Balham were brought into use on Friday last, December 15, and the date for Trinity Road has been announced as December 22, leaving only Maida Vale closed.

Charing Cross station, which in normal times is used by more than 41,000,000 passengers a year, is served by the District Line and by two deep-level tube lines, the Northern and the Bakerloo. When war became imminent, the deep-level tube stations had to be closed to permit the engineers to complete the installation of floodgates isolating the section


A TRAFFIC NOTICE
OPENING
FRIDAY DECEMBER 15
CHANCERY LANE
BALHAM
FRIDAY DECEMBER 22
TRINITY ROAD
A LITTLE LATER
BANK NORTHERN LINE
Central Line now open - entrance in Lombard St.
MAIDA VALE
NORTHERN LINE CITY SECTION:
London Bridge and Moorgate
LONDON TRANSPORT
DISTRICT LINE
CENTRAL LINE
BAKERLOO LINE
CHARING CROSS
UNDERGROUND
All lines open
All interchange open
DECEMBER 17
ALREADY OPEN: ARSENAL, BOND STREET
CLAPHAM COMMON, GREEN PARK, HYDE PARK CORNER
KINGS CROSS, KNIGHTSBRIDGE, MARBLE ARCH
OLD STREET, OVAL, OXFORD CIRCUS, TOTTENHAM CT. RD
CLOSING OF
EAST LONDON LINE
During Sunday, December 10, the train service between Shoreditch and New Cross Gate and New Cross will be cancelled owing to engineering works
Special buses will run serving Whitechapel, Rotherhithe, Surrey Docks, New Cross Gate and New Gross stations
Whitechapel, Rotherhithe, Surrey Docks, New Cross Gate and New Cross stations will be open for the issue of tickets, which will be available on the special buses
Season tickets may also be used on the special buses
Usual train service on Monday December 11
LONDON TRANSPORT

Three of the latest London Transport posters

under the River Thames, and the Kennington—Strand portion of the Northern Line has been closed since September 1. In addition, the Bakerloo Line platforms at Charing Cross were closed at the same time, but trains continued running through. Only the District Line station has been open, therefore, and the interchange facilities, normally used by more than 20,000,000 passengers a year, between the District and the tube lines have been closed. The protective gates which have been installed are of two types, namely, tunnel gates, each weighing 6 tons, to isolate the sections of tube tunnel under the Thames; and sector gates, situated at the foot of the escalators where they join the platforms, to close the passages leading down from the District Line station at surface level to the tube stations. In all there are ten gates in the tube tunnels at Charing Cross and Waterloo, and these were described and illustrated in THE RAILWAY GAZETTE of October 13 last. The sector gates, of which there are six at Charing Cross, each weigh 4½ tons. Because of the limited space on the platform they have been made to slide inside the roof of the station tunnel. They may be closed on receipt of an air-raid warning in two minutes, either by push button or by hand. The later stages of their installation have involved an exciting race against time, with many anxious hours. The gates did not leave the manufacturer's works at Kilmarnock, Scotland, until Wednesday, December 6. The lorries were delayed by heavy fogs and did not arrive in London until the morning of December 9. Then the gates had to be loaded on to special trains, transported to the platforms, and fitted. It was not until then that gangs could begin clearing the tunnels by cutting away the emergency concrete plugs, each weighing 35 tons, that were constructed at the outbreak of war. The contractor for the work was John Mowlem & Co. Ltd., and the manufacturer of the gates Glenfield & Kennedy Limited. The total weight of steel involved in these protective gates is approximately 87 tons, namely, ten tunnel gates of 6 tons and six sector gates of 4½ tons.

Captain Euan Wallace, the Minister of Transport, inspected the works at Charing Cross on Friday last, December 15. He operated one of the sector gates on the Northern Line southbound platform and then travelled to Waterloo on the first passenger-carrying Northern Line train to run under the Thames since the outbreak of war. At Waterloo he examined the tunnel gate. Among those present were :—

Ministry of Transport : Mr. Robert H. Bernays, Parliamentary Secretary ; Sir Leonard Browett, Permanent Secretary ; Mr. R. H. Hill, Railway Control Officer, Ministry of Transport ; Lt.-Colonel A. H. L. Mount, Chief Inspecting Officer of Railways ; Lt.-Colonel E. Woodhouse, Inspecting Officer of Railways ; and Mr. D. E. O'Neill, Private Secretary to the Minister of Transport.

London Passenger Transport Board : Lord Ashfield (Chairman) ; Mr. T. E. Thomas, General Manager (Operation) ; Mr. V. A. M. Robertson, Chief Civil Engineer ; Mr. W. T. Halcrow, Consulting Engineer ; Mr. Evan Evans, Operating Manager (Railways) ; Mr. W. P. N. Edwards, Public Relations Officer ; and Mr. A. J. Webb, Outdoor Superintendent.

Brighter Southern Railway Stations

Lighting consistent with the Home Office regulations has been provided at 200 of the stations on the Southern Railway, and a further batch of stations is now being dealt with. Additional lighting to assist in handling mails, luggage, and parcels traffic has already been installed at a number of stations, and soon 61 stations will be so equipped. At these places the additional lighting is controlled by a master switch. With the approach of Christmas it has been foreseen that there will be greater demands for additional lighting of this type, and 44 stations are being specially equipped in order to facilitate the movement of the heavy parcels and mail traffic expected.

Arrangements are being made for normal lighting and fires, having due regard to rationing, to be provided in the waiting rooms at the whole of the 860 stations on the system. At important stations, light traps are fitted to the doors and opaque curtains to the windows, but somewhat simpler methods are being adopted at the smaller stations, all the windows, excepting one or two, according to the size of the room, being treated with black paper and improvised screens provided for the windows left uncovered. These screens are put up at blackout time, so that natural lighting is available in the rooms during the daytime. The blacking out of the waiting room windows is being so arranged that a stencil bearing the name of the station will be visible to passengers, illuminated by the lighting in the waiting room during the hours of darkness. In order to assist passengers further in identifying their stations, the illumination from the platform lamps is being so arranged that it falls directly on to the station nameplates. In addition to this, wherever practicable the station name is also placed inside the shades of certain types of lamps in such a position that it can be seen readily by passengers in the trains. The station staffs have been impressed with the necessity of calling out the station names clearly, and loud speakers are being extended to the larger interchange points as an assistance to passengers during the hours of darkness.

Speedier Release of Wagons

As foreshadowed in his statement in the House of Commons on December 6, the Minister of Transport, under the Defence Regulations, has made the Railways (Demurrage Charges) Order of December 14, 1939, which authorises the railway companies named in the Railway Control Order, 1939, to increase from December 15 the demurrage charges for railway wagons, containers, and sheets, and reduce the free time. The Order applies to wagons owned by these railway companies and also to any wagons requisitioned by the Minister of Transport under the Defence Regulations. Broadly, the effect is to reduce to 24 hours the free time allowed for loading or unloading and to double the demurrage charges payable for the detention beyond that period. The Order provides that in calculating the free time Sundays, Bank Holidays, and the period from 12 noon to midnight on Saturdays, shall not be included, and that when the free time begins after 12 noon on any day the rest of that day shall not be included. At private sidings the period of 24 hours applies only if the wagons are returned empty; if returned loaded the free period is 48 hours. Until March 31, 1940, registered coal merchants will be allowed 48 hours instead of 24 hours for unloading wagons. By that time they will be expected to have made such arrangements as will enable them to comply with the general requirements that wagons should be released after 24 hours. The Order provides that the charges and free periods set out in the schedule to the Order shall not apply to wagons used for the conveyance of coal, coke, or patent fuel, where the operation of such wagons is regulated under a system of control agreed between the railway companies and the interests concerned, and approved by the Minister of Transport. The Minister has given an assurance that the Order will be administered with due regard to any genuine difficulties which traders and agriculturalists may have in giving strict compliance, provided they can show that by the institution of a proper control of their forwarding arrangements and, where practicable and necessary, the re-organisation of their unloading and storage arrangements, they have taken all reasonable steps to adjust themselves to the needs of the situation.

Rolling Stock for France

The Ministry of Supply, which is responsible for providing the British Expeditionary Force in France with locomotives, rolling stock, and permanent way materials, has placed orders with the Locomotive Manufacturers' Association for 240 2-8-0 freight tender engines and with the Carriage & Wagon Builders' Association for 10,000 20-ton covered goods wagons. The engines and goods wagons are to be used overseas on certain sections of the French railways operated by the British Expeditionary Force. The cost of the engines and goods wagons will be about £8,000,000. In addition, approximately £1,750,000 worth of permanent way equipment and various mechanical handling plants for docks have been ordered, making a total expenditure of about £9,750,000. These orders will provide work for a large number of men in the locomotive and wagon building trades for some time. In making delivery arrangements the Ministry of Supply has left manufacturers a sufficient margin of productive capacity to provide for general export trade requirements.

RAILWAY AND OTHER MEETINGS

Bengal Dooars Railway Co. Ltd.

The forty-ninth annual general meeting of the Bengal Dooars Railway Co. Ltd. was held at the registered office of the company, Gresham House, Old Broad Street, London, E.C.2, on December 13, Mr. G. Anson Bayley, Chairman of the company, presiding.

The Secretary (Mr. F. J. Horne) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, considered that the results for the working of the railway during the year under review were not unsatisfactory in view of the competitive road transport which they still had to combat. Coaching traffic receipts were Rs. 3,71,639; a decrease of Rs. 15,794, entirely due to a falling off in the number of third class local passengers carried, which was partly because of bus competition and partly due to bench courts and debt settlement boards being formed in many places along their railway to which people now either walked, or alternatively travelled only short distances by train. Goods traffic receipts were Rs. 15,37,554, an increase of Rs. 35,458 over the previous year, the principal improvement being Rs. 26,714 under the head "All other articles of merchandise," due to heavier foreign inward traffic. Other increases were in mineral substances, Rs. 6,040; food grains, Rs. 5,807; manures, Rs. 3,030; and small improvements in some other commodities. These were offset by decreases, the principal of which were in wood, Rs. 8,455; metals, Rs. 8,396; tobacco, Rs. 3,914, &c. The ferry service showed a decrease of Rs. 3,445 and miscellaneous earnings an increase of Rs. 2,888. Working expenses showed an increase of Rs. 6,620, but the percentage of working expenses to gross earnings was slightly lower, being 59·58, as compared with 59·83 for the year ended 1938, and 63·52 for the year ended 1937.

With regard to the net revenue account (No. 7), after making provision for Indian income tax and super tax amounting to Rs. 1,11,648, as compared with Rs. 70,243 for the previous year, that account showed aggregate earnings of £53,193, which with the balance brought into the accounts for the previous year gave a total of £110,442. From this sum must be deducted the preference stock dividend amounting to £14,400 for the year, the payment of an interim dividend of 3 per cent. on the ordinary stock, £12,000; reserve for United Kingdom income tax, £2,500; and exchange difference, £210. This left a balance of £81,332 to be dealt with, from which the directors had carried £10,000 to the credit of reserve account and now recommended the payment of a final dividend of 3½ per cent., making 6½ per cent. for the year (the same as for the previous year), which would absorb £14,000, and leave a balance of £57,332 to be carried forward, which was slightly more than the balance brought into the accounts from the previous year.

He was glad to be able to report that during the current year the flood damages had been almost negligible—they hoped that the works referred to as necessary at their general meeting last year and which had since been completed, would afford protection so long as there were no major changes in the Teesta River channels. During the last cold weather he (the Chairman) visited India and spent several weeks inspecting their railway. He was pleased to state that the permanent way was well maintained and the running satisfactory, but the board had been considering the renewal, on account of age, of some 60 miles of track and were preparing a programme of renewals spread over several years; the advent of the war must necessarily postpone this. The locomotives had been maintained in good working order and no replacements were anticipated for the present but it has been proposed to change over some engines to superheater with a view to economy in coal consumption, but this work also must stand over. The rolling stock though somewhat old was in a satisfactory state and it was hoped would give good service for some years longer.

Proposals for improvements in the workshops at Domohani and of their property, amounting to a moderate cost only, were considered during his visit and as the Manager was on leave during the summer the board had the advantage of discussing these matters with him and a programme was prepared, but, except for a few works of an urgent nature, such works must now be held in abeyance. He was able to motor over all the roads on which competitive road transport now operated and it was difficult at present to say what measures could be taken to cope with this competition especially as more roads were likely to be constructed —possibly the use of petrol rail motor units might be one solution and investigation was being made as to the practicability of such vehicles.

The current financial year had been unsatisfactory so far, as climatic conditions had been very unfavourable for tea production and earnings were lower by Rs. 99,306 at November 30, last, and it would be unwise to prophesy that this would be recovered before the close of the year. The tea quota had, however, been raised to 95 per cent., which should help in a small way. If the war was prolonged the cost of materials and stores would rise and their working expenses must be affected. The stockholders were probably aware that should the Government decide to exercise the option to purchase the railway at December 31, 1940, 12 months' notice of this intention must be received by the end of the present month. The India Office had not yet notified them as to the intention of the Government, and he therefore regretted that he was not able to give any information on this important matter, but the decision of the Government would be notified to the press as soon as it was received. In conclusion he wished to record the Board's appreciation of the good work of the staff of all grades in India and of their London office staff.

The Chairman then moved: "That the report of the directors and the audited statement of accounts for the year ended March 31, 1939, now presented, be and they are hereby approved, confirmed and adopted."

Sir A. Kay Muir seconded the motion.

There being no questions, the Chairman put the resolution to the meeting, and it was carried unanimously.

The Chairman then moved: "That a final dividend of 3½ per cent. on the ordinary stock of the company for the year ended March 31, 1939, subject to income tax, making, with the interim dividend of 3 per cent. paid on March 29, 1939, a distribution of 6½ per cent. for the year, be and it is hereby declared to be paid to the holders of ordinary stock standing on the registers of the company on December 1, 1939, and that warrants for the dividend be issued on December 18, 1939."

Mr. R. Langford James seconded the resolution, which was carried unanimously.

The Chairman moved the re-election of Mr. J. A. Tassie, the director retiring by rotation, and the resolution, seconded by Colonel W. R. Izat, was carried unanimously.

A stockholder moved that Messrs. W. A. Browne & Company be elected as auditors of the company for the ensuing year at a remuneration of 70 guineas. This motion was seconded and unanimously carried.

A hearty vote of thanks to the company's agents in Calcutta, and to the Manager and his Staff in India was moved by the Chairman, seconded by Mr. J. A. Tassie, and carried unanimously.

The Chairman then declared the meeting closed.

Pullman Car Co. Ltd.

The ordinary general meeting of the Pullman Car Co. Ltd. was held at Victoria station on December 14, Sir Follett Holt, K.B.E., M.Inst.C.E., Chairman of the company, presiding.

The Secretary, Mr. E. A. Ashton, read the notice convening the meeting and the auditors' report. The Chairman, in moving the adoption of the report and accounts, said:

Throughout the last war, except in a minor instance where compensation was paid for the suspension of a service, the Pullman Car Company was permitted to carry on its business in a normal way, providing comfortable seats, good lighting, food and refreshments to the weary and distressed travellers of that time. It is indeed difficult for the ordinary mortal to

understand why, with the need as great, these facilities were completely withdrawn on the outbreak of this war. There can be little question at this time of travelling for pleasure. Those who travel do so merely to enable them to take their share in some shape or form in keeping the machinery of government or of business in action.

Anyone with knowledge of railways knows what that industry, of which we form a part, has been through since the last war. The re-adjustments and re-organisations have been on a vast scale and we at least had reached a point where our house was at least in fair order. I can imagine your feelings as shareholders and you can imagine ours, when on September 7 we received Government orders that all our cars were to be withdrawn from service, but that is just what happened. Through the influence of the Southern Railway 45 out of our 219 cars have since been returned to service and we can only hope that as time goes on the Government will permit, for the benefit of the unfortunate traveller, a more normal service.

The redeeming feature of the past year, if there is such a feature, is that we were able to earn before the breakdown sufficient revenue to meet the interest on the 4½ per cent. debenture stock and 2½ per cent. on the 5 per cent. cumulative income stock for the year, and to provide from the balance of net revenue account the full depreciation quota. During the year also by contracting to build a further 7 new cars we succeeded in obtaining a renewal of the contract with the London & North Eastern Railway for a further 10 years from the date of their delivery. These cars are under construction and although they are now, of course, only proceeding slowly, we shall become liable for their payment over a period of 3 years after delivery. The sum involved will amount to about £45,000. We have also to remember that we are under contract to repay over 3 years in equal quotas commencing on January 1, 1941, the £100,000 due to the 4½ per cent. debenture holders, the total liabilities therefore to be met during, say, the next 4 years amounts to £145,000, to meet which we have in hand resources at present available £50,000.

As to the extent of the compensation which will be considered fair and reasonable to afford the company for the forced suspension of its business, I can say nothing at the moment. I can tell you, however, that with the great reduction made in expenses we are just about able at present to pay the current out-of-pocket expenses of the very small service we are now working.

Speaking for my colleagues and myself, I cannot tell you how greatly we have appreciated the help given and the willing sacrifices made by Mr. Griffith, Mr. Ashton, and the chief officials and staff.

The report and accounts were adopted.

The Basis for Compensation

Sir Charles Stuart-Williams at the annual meeting of the British Railway Stockholders' Union

Sir Charles Stuart-Williams, Chairman, presiding on December 15 at the seventh annual general meeting of the British Railway Stockholders' Union Limited, in London, said that with the outbreak of war on September 3 the whole position of railway traffic was changed. Great sections of traffic had come once more to the railways, some from the road hauliers but a good deal also from coastwise shipping, in particular the coal trade between the North and London. Thus the L.N.E.R. had suffered a loss of at least 10 per cent. in shipment coal but had carried an increased tonnage of 20 per cent. in land sale coal. Within the first two months of war the coal traffic handled by the railways increased by one-third and there was evidence that other heavy traffic had increased from 20 to 25 per cent. In spite of the handicaps due to the blackout conditions, British railways in general had probably seen an increase of about 25 to 30 per cent. in their total freight traffic since the war began. During the first six weeks the L.M.S.R. ran 32,000,000 more wagon miles than in the corresponding period of last year, an increase of 21·4 per cent. In the same period the L.M.S.R. had to provide 647,000 more loaded wagon journeys. The increase on the Great Western was even more noteworthy as merchandise and other mineral traffic increased by 47 per cent. compared with the same weeks in 1938. The L.M.S.R. coal receipts were up by 36 per cent. in spite of a 10 per cent. decrease in the traffic due to export coal. It could not be expected that passenger traffic would increase in wartime but the decrease had been small. On the Great Western it had been only 2 per cent. down, and this had probably been accompanied by considerable economies due to running fewer and better-filled trains. If these increases were transformed into net revenue earned by the railways, they represented a substantial recovery towards the normal, and the dividends earned by British railways in the normal year of 1929 would not be an extravagant recompense for the great services they were doing to the State.

This raised the whole question of compensation and the terms which stockholders might fairly expect from the Government. It might, of course, be said why not demand the Standard Revenue? Certainly, the Standard Revenue was a bargain made with the stockholders when the Act of 1921 came into operation and, in the event of nationalisation, particularly if the "square deal" promises had not been implemented, there could be no doubt that the Standard Revenue would be a very proper and a very valuable negotiating instrument. It must, however, be remembered that the net profit of £51,000,000, which was represented by the Standard Revenue clause, was not a hard and fast guarantee. It was, on the contrary, a maximum, and their view was that it should be regarded in that light. If the railways could earn the maximum revenue under war conditions, and this did not seem to him in any way impossible, they were fully entitled to do so. But he could not see adequate justification for claiming the Standard Revenue as a guaranteed profit, and asking that it should be regarded as a minimum. The main feature of the 1921 Act was the provision for the fixation by the Railway Rates Tribunal of standard charges at such a level as to bring to the railways an annual net revenue (before remuneration of debenture capital) of approximately £51,000,000. The tribunal was not merely enabled to adjust charges from year to year so as to ensure the earning of the Standard Revenue; it was placed under a definite obligation to do so. Unhappily, the tribunal never found itself able to make these yearly adjustments, and in no year had the Standard Revenue been earned.

There were some factors in the problem, said Sir Charles, which seemed to him important in themselves and also to have hardly received adequate recognition in the financial press. In the first place, it would be quite incorrect to assume that the railways in wartime were doing the same business and doing it in the same way as in peacetime. The conditions were different in many ways, and new factors were appearing at every turn. The railways like other people had had to spend large sums upon air raid precautions, both those needed to safeguard their staff and those designed to protect their property so far as possible and to ensure its working in all conditions. But quite apart from these special items of expenditure, there were many others associated with wartime traffic which meant drastic changes in normal working. Then again, there was in the background the risk of aerial or other damage by the enemy, a contingency of incalculable moment, and one likely to be only partially covered by any Government insurance scheme. Then there was the important question of additional capital to be spent to meet the Government's special requirements and of the deferred cost of delayed maintenance work. There was also the question of excess profit tax and how far it applied. Finally, there might be questions arising from transport relations with our Allies which would render the compensation problem even more difficult. It would seem apparent that

there was no royal road, either to a lump sum figure or to an acceptance of traffic results, as the basis of settlement. The actual figure must, the speaker thought, be a compromise.

Emphasising the need for an early decision on this point, Sir Charles asked the stockholders to assent to the following proposal as a basis for compensation: (*a*) That the average of net profits covering the last three years (unless it was possible to exclude 1938 as a crisis year) should be accompanied by a suitable and adequate percentage addition covering three things: (1) general trade improvement over the slump conditions of 1938; (2) results of the "square deal" legislation; and (3) improvement due to wartime traffic both before and after the declaration of war. This might be regarded as acceptable in determining both the minimum compensation and also the dividends for the period from the outbreak of war to the end of the calendar year. (*b*) That any final arrangement should, subject to the minimum mentioned above, fully reflect all wartime increases of traffic, after provision has been made in the rates schedule for all increased working expenses.

This resolution was carried.

QUESTIONS IN PARLIAMENT

Farmers and Railway Facilities

Mr. J. de Rothschild (Isle of Ely—Lib.), on December 6, asked the Minister of Transport whether his attention had been called to the dissatisfaction of agriculturists in the Isle of Ely on account of the restrictions placed upon road hauliers on whom these agriculturists relied for the carriage of their produce; if he would satisfy himself that the railways in the area offered an adequate and satisfactory alternative means of transport for such a large volume of traffic; and whether, in case of the railways not providing adequate facilities, he would take steps to augment the petrol allowances of hauliers in the region.

Captain Euan Wallace (Minister of Transport): A resolution from the Isle of Ely Branch of the National Farmers' Union was received on October 30 suggesting that railway facilities were inadequate. This complaint was at once investigated, and as a result I am advised that in general the railways offer adequate and suitable means of transport for the traffic to which the hon. member refers. Where they do not, applications can be made for supplementary fuel rations for any necessary transport by road. If the hon. member has in mind any recent case where it is alleged that adequate transport has not been available and will send me the necessary particulars, I will gladly have the matter looked into.

Railway Facilities for Evacuated Teachers

Mr. T. E. Harvey (English Universities—Ind.), on December 7, asked the Minister of Health, whether any decision had yet been reached as to improvements in the billeting allowances in respect of evacuated teachers; and whether it was proposed to allow any special railway facilities to such teachers, a large number of whom had had to move to a considerable distance from their homes, in order to enable them to revisit their families and friends without undue expense.

Mr. Walter Elliot (Minister of Health): Both these matters are under close consideration. I am afraid that I cannot say when a decision will be reached but I can assure the hon. member that there will be no avoidable delay.

Travelling to Visit Evacuees

Mr. L. Silkin (Peckham—Lab.), on December 13, asked the Minister of Transport if he was aware of the hardship caused to parents desiring to visit their children in the reception areas under the recent scheme for cheap fares by reason of the fact that these cheap tickets were available only to certain large stations; that on December 3 certain parents visiting their children in Dulverton were given tickets to Taunton only and, as on arrival, they found there were no other means of transport to Dulverton available they had to make the rest of the journey by hiring a motorcar at a cost of £1 10s.; that the times of the trains were such that they saw their children for one hour only; and would he give further consideration to the scheme with a view to the removal of these hardships.

Captain Euan Wallace: Every effort was made by the railway companies and my Department to ensure that parents using the special trains to reception areas were made aware of the places which could be reached from the stations served and, as I have already explained in detail to the hon. member, where, as in the case to which he refers, vouchers had been issued in error to places which could not conveniently be reached, steps were taken as soon as the errors were discovered to warn intending passengers of the difficulties before them. Profiting by the experience which has been gained from the special trips which have been run during the last two Sundays, I hope to be able after Christmas to extend the scheme of cheap rail facilities to include additional places in the reception areas. The hon. member will, however, appreciate the difficulty of providing for small numbers of visitors who wish to reach remote villages.

Ventilating fans and anti-gas filtration plants for A.R.P. shelters, suited to electric or manual drive are described in a folder received from Keith Blackman Limited, of Tottenham, London, N.17.

British and Irish Railway Stocks and Shares

Stocks	Highest 1938	Lowest 1938	Prices Dec. 19, 1939	Recent Fall
G.W.R.				
Cons. Ord.	65¼	25⅝	35	+1
5% Con. Prefce.	118¾	74	87	+1⅛
5% Red.Pref.(1950)	111¾	90	94½	+1
4% Deb.	111	97½	99½	—1
4½% Deb.	112⅝	100½	101	—1
4½% Deb.	118½	104	105½	—
5% Deb.	131½	119	117½	—
2½% Deb.	69⅝	60	58½	—
5% Rt. Charge	129	114	111	—
5% Cons. Guar.	128½	103	107	—
L.M.S.R.				
Ord.	30½	11	12¼	—
4% Prefce. (1923)	70¼	23	42	+⅛
4% Prefce.	82¼	43⅝	59½	—
5% Red.Pref.(1955)	103½	66	77	—
4% Deb.	105¾	85	88½	—2
5% Red.Deb.(1952)	114¼	105	105	—
4% Guar.	102⅝	77½	79½	—3
L.N.E.R.				
5% Pref. Ord.	8⅞	3½	3⅝	—
Def. Ord.	4 7/16	2 1/16	2¼	—
4% First Prefce.	68¼	21	38	+1
4% Second Prefce.	27¼	8	12	+⅛
5% Red.Pref.(1955)	97	40¼	49	+1
4% First Guar.	97½	66¼	72½	—1
4% Second Guar.	91¼	52	62½	—2
3% Deb.	79¼	60	62½	—2
4% Deb.	104⅛	77	82½	—3
5% Red.Deb.(1947)	110⅝	97	100½	—
4½% Sinking Fund Red. Deb.	108 11/16	101	99½	—
Southern				
Pref. Ord.	87	47⅞	65	—
Def. Ord.	21⅝	9¼	11⅝	—¼
5% Pref.	115	83	89	—
5% Red.Pref.(1964)	115½	98	96½	—
5% Guar. Prefce.	128½	106	107½	+1
5% Red.Guar.Pref. (1957)	116	108½	106½	—
4% Deb.	109¼	95	98½	—1
5% Deb.	129	117	114½	—
4% Red. Deb. 1962–67	107	101½	101½	—
4% Red. Deb. 1970–80	—	—	100½	—1
Belfast & C.D.				
Ord.	4	3½	4	—
Forth Bridge				
4% Deb.	102	99⅛	86½*	—1
4% Guar.	103¼	94½	84½*	—1
G. Northern (Ireland)				
Ord.	5½	2½	6	—
G. Southern (Ireland)				
Ord.	25½	8½	13	—
Prefce.	35	13	23½	—
Guar.	70¼	30 15/32	37	—
Deb.	83	56	54½	—
L.P.T.B.				
4½% "A"	119⅝	107½	105½	—2
5% "A"	130	117	111½	+1
4½% "T.F.A."	108	98	104	—
5% "B"	122 13/16	105	103½	—2
"C"	84	68	65¼	+¼
Mersey				
Ord.	24¼	16½	20½	—
4% Perp. Deb.	102⅞	94⅝	90	—
3% Perp. Deb.	77	69	65½	—
3% Perp. Prefce.	66½	57	52½	—

* ex dividend

NOTES AND NEWS

Dutch Electrification.—The Netherlands Railways are to put in hand the electrification of the Amsterdam-Amersfoort; Utrecht-Hilversum; and Blauwkapel-Amersfoort lines, totalling 48 miles of double-track route. Conversion is scheduled to be completed by 1941. The standard 1,500-volt d.c. system will be used with overhead conductors.

Southern Railway "Hints for Holidays."—In our issue of December 8, it was announced that notwithstanding the war, the Great Western, L.M.S., and L.N.E. Railways had all decided to issue their holiday guides next year, and it goes without saying that the Southern Railway Holiday Guide "Hints for Holidays" will also be issued next year. We regret that owing to an inadvertence, reference was not made to this fact at the time of dealing with the publications of the other main-line companies.

Transport Reserved Occupations.—The Ministry of Labour and National Service announces certain changes in the provisional schedule of reserved occupations which was issued in September. Items of railway interest were set out at page 381 of our September 15 issue. New entries regarding rail transport workers are: signal and telegraph maintenance and repair man, for whom the age of reservation is 23; cleaner (qualified train, carriage, wagon, brake, &c., examiner), with a reservation age of 25. Among other rail transport workers the age of reservation has been reduced from 30 to 25 in the following cases: permanent way (including engineering) maintenance and repair man; porter (qualified signal man); porter (qualified guard); porter (qualified shunter); train, carriage, wagon, brake, &c., examiner. Another rail transport occupation, namely, that of porter (qualified goods checker), is now included as a separate item with a reservation age of 30.

L.N.E.R. Mishaps.—Three accidents involving passenger trains occurred last week, fortunately without serious result. On December 13 a train was derailed at a crossover between Waverley and Haymarket stations, Edinburgh. No one was injured. On December 14 there was a collision at Billingham-on-Tees station between a goods locomotive which had fallen on its side as a result of over-running a buffer stop, and the 6.20 a.m. Newcastle to Middlesbrough passenger train which was running on the adjoining line. Again there were no injuries. At 8.25 p.m. on Saturday, December 16, three coaches of the 6.30 p.m. Doncaster to York passenger train became derailed a short distance north of Selby station. The 4 p.m. express from King's Cross to York came to a standstill at the signals, but was run into in the rear by the 7.55 p.m. passenger train from Leeds to Hull. The engine of the latter train and the rear coach of the King's Cross train were damaged. Traffic was resumed normally by 10.40 a.m. on Sunday. Three soldiers were slightly injured in this accident.

Railway Rates Tribunal Sittings.—The tribunal will sit on Tuesdays, January 23, February 20, March 19, April 16, May 21, June 18, July 16, October 15, November 19, and December 17, 1940, to hear applications as to the granting of new, or the reduction of existing, exceptional rates. It will also sit on Tuesdays, January 30, April 23, July 23, and October 22, 1940, to hear applications relating to classification; applications as to reductions to be made from standard charges where damageable merchandise is carried under owner's risk conditions; and applications as to rebates under the Railway Freight Rebates Scheme.

More German Railway Accidents.—In addition to the six fatal accidents already recorded in THE RAILWAY GAZETTE during the last three months, it is now reported that a head-on collision, in which 17 persons lost their lives, occurred on the night of December 12 near Hagen, on the branch line between Hagen and Bochum, *via* Wetter. The following is a list of these seven accidents on which editorial comment is made on page 793:—

Date	Place	No. Killed	Remarks
October 8	Gesundbrunnen, Berlin	20	Collision (A.T.C. installed).
October 26	St. Valentin, near Linz (Austria)	20	Derailment.
November 5	Eger-Pilsen (Bohemia)	5	Derailment.
November 13	Langlieben, Upper Silesia	43	Head-on collision.
November 19	Spandau, near Berlin	9	Collision (A.T.C. installed).
November 26	Nieder Wöllstadt	15	Collision.
December 12	Hagen	17	Head-on collision.

CONTRACTS AND TENDERS

The Ministry of Supply has placed orders with the Locomotive Manufacturers' Association for 240 Consolidation (2-8-0) tender engines, and with the Carriage & Wagon Manufacturers' Association for 10,000 covered freight vans of 20 tons capacity. The locomotives are to be built by Beyer, Peacock & Co. Ltd., the North British Locomotive Co. Ltd., and the Vulcan Foundry Limited. The following firms are participating in this order: Metropolitan-Cammell Carriage & Wagon Co. Ltd.; Birmingham Railway Carriage & Wagon Co. Ltd.; Gloucester Railway Carriage & Wagon Co. Ltd.; Hurst, Nelson & Co. Ltd.; R. Y. Pickering & Co. Ltd.; Head, Wrightson & Co. Ltd.; Chas. Roberts & Co. Ltd.; Cravens Railway Carriage & Wagon Co. Ltd.; G. R. Turner Limited; the Butterley Co. Ltd. The price of the locomotives and wagons is estimated at £8,000,000. In addition, permanent way equipment and mechanical handling plant for docks have been ordered to the value of about £1,750,000.

The construction in this country by private builders of 58 locomotives for Turkey, which is at present in hand, is to be expedited under the plan to allocate productive capacity to which we refer in an editorial note at page 793.

The Drewry Car Co. Ltd. has received an order for a 2-ft. gauge inspection car from the Colonial Sugar Refining Co. Ltd., and another for one diesel locotractor from Lloyds Sawmills Limited.

A representative of a large French firm manufacturing railway equipment is stated to have arrived in New York to purchase machine tools to the value of anything from 20,000,000 to 60,000,000 fr.

The Egyptian State Railways have recently placed the following orders:—

Thos. Bolton & Sons Ltd.: Copper plates (No. 6.368—£294).

Stewarts and Lloyds Ltd.: Tubes (17.285 item 4—£193).

Scottish Tube Co. Ltd., Birmingham: Tubes (17.285 items 3 and 5 to 9—£58).

North British Locomotive Co. Ltd.: Coupled axleboxes (21.1097—£264 f.o.b.).

Glasgow Railway Engineering Co. Ltd.: Axles (Ref. No. 321.9.8./2-213: £341 f.o.b.).

Forges de Haine St. Pierre, Belgium: Engine cylinders (Ref. No. 321.G.8/2-199; 20,506 belgas f.o.b.).

Indian Iron & Steel Co. Ltd., Calcutta: Pig iron (Ref. No. 306.G.8/110).

S. A. Franco-Belge: Slide Bars (21·1104—£363 f.o.b.).

W. T. Henley's Telegraph Works Co. Ltd.:—Cable (30·510—£465 f.o.b., and 30·511—£465 f.o.b.).

Arthur Balfour & Co. Ltd., Sheffield: Hand tools and drill sleeves (8·269—£259).

English Tools Ltd., Wigan: Shovels (£350).

The East Indian Railway is calling for quotations, for "HPS" class steam locomotives and tenders, to be in at Calcutta by January 17, 1940. D.O.T. Ref. No. 29967/39. E.I.R. Tender No. S/SP/906/A. Consulting engineers: Messrs. Rendel, Palmer & Tritton.

The last date for tenders in response to the Eastern Bengal Railway enquiry for 43 locomotive boilers (see this column in our November 17 issue) has been postponed to January 15, 1940.

The Egyptian State Railways invite tenders for up to 10,000, 20,000, and 100,000 rail anchors for 47 kg., 46 kg., and 42 kg. rails respectively. Tenders (No. E.S.R. 302.G.3/29) to be in at Cairo by December 30. Another enquiry is for 380 helical and volute springs for carriage bogies (Ref. No. 21.1136); particulars from the Chief Inspecting Engineer, 41, Tothill Street, London, S.W.1.

XUM

Railway Share Market

Despite the small amount of business passing in the stock and share markets, values in most sections of the Stock Exchange were quite well maintained. Home railway securities experienced a fair amount of profit-taking, but on the assumption that they are probably rather moderately valued at current levels, buyers were reported on any easing of the junior stocks. Sentiment in regard to the latter has benefited from the recent L.M.S.R. announcement that the books are being made up in preparation for payment of the half-yearly dividend on the 5 per cent. redeemable stock. This stock ranks *pari passu* with the first preference stock, which is now generally regarded as assured of its full dividend. Moreover, the market is anticipating that the full 4 per cent. will also be paid on the 1923 preference. L.N.E.R. first preference and Southern preferred are likewise generally expected to receive their full distributions for 1938, and moreover the market remains hopeful of small payments on L.N.E.R. second preference, Southern deferred and L.M.S.R. ordinary. The disposition now is to budget for slightly more than 3 per cent. on Great Western ordinary. Nevertheless, the junior stocks may show somewhat sharp fluctuations, pending publication of the Government's war-time compensation plans, although in most quarters they are regarded as moderately priced at current levels. Debentures have had a slightly easier appearance in sympathy with the tendency in gilt-edged securities.

Great Western ordinary attracted more attention and further improved to 35, which compares with 34 a week ago. The 5 per cent. preference stock kept at 86½, and the 5 per cent. guaranteed at 107, but the 4 per cent. debentures were a point down at 99½. L.N.E.R. first preference was slightly higher at 37½, and the second preference held its recent improvement, but the second guaranteed went back from 65 to 62½, and the first guaranteed from 73½ to 72. The 4 per cent. debentures were 82½, compared with 85 a week ago, and the 3 per cent. debentures 62½, compared with 64½. Among L.M.S.R. stocks the ordinary was at 12¼, while the first preference was virtually unchanged at 59, and the 1923 preference was half a point down at 41½. The 4 per cent. guaranteed was marked down from 82 to 80, and would appear to be undervalued, bearing in mind its good investment merits. L.M.S.R. 5 per cent. debentures remained at 105, but the 4 per cent. debentures were 88½, compared with 90½ a week ago. Southern preferred attracted buyers, and on balance the price was fractionally higher at 65½, while the deferred at 11⅜ maintained the improvement shown a week ago. On the basis of its full 5 per cent. dividend, the preferred stock gives an attractive yield at its current price, assuming the market is correct in its belief that this stock has good prospects of receiving its full dividend throughout the war period. Southern guaranteed continued a steady feature at 107½, while the 5 per cent. preference was fractionally better at 89½, but the 4 per cent. debentures lost a point to 98.

In the foreign railway section, movements in prices were slightly reactionary, due to absence of demand. Debentures and most preference stocks of the Argentine companies continue to be firmly held on the improved outlook for the railways. Central Argentine 5 per cent. debentures remained at 69, but B.A. Gt. Southern 4 per cent. debentures were a point down at 63½. B.A. Western 4 per cent. debentures made the better price of 55. Elsewhere Antofagasta preference have been lowered to 25. Leopoldina debentures at 18 more than held last week's rise, but San Paulo went back to 37. French railway sterling bonds have been marked up sharply; Canadian Pacific developed an easier tendency.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1938–39	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1938	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1938	Prices: Lowest 1938	Prices: Dec. 19, 1939	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	10.12.39	15,950	+ 1,990	49	680,780	735,750	— 54,970	Ord. Stk.	14	7 1/4	7 1/2	Nil
	Argentine North Eastern	753	9.12.39	ps. 135,200	— ps. 2,300	24	ps. 3,848,500	ps 3,976,000	— ps. 127,500	,,	6 1/2	2	2 1/2	Nil
	Bolivar	174	Nov. 1939	4,680	+ 1,780	48	47,530	40.100	+ 7,430	6 p.c. Deb.	8	7	7	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	10	4	6	85/16
	Buenos Ayres & Pacific	2,801	2.12.39	ps1,316,000	— ps65,000	23	ps.26,764,000	ps26,473,000	+ ps 291,000	Ord. Stk.	6 1/2	3 1/4	4	Nil
	Buenos Aires Central	190	21.10.39	$107,700	— $5,400	17	$1,934,600	$2,045,700	— $111,100	Mt. Deb.	15 2	8	12	Nil
	Buenos Ayres Gt. Southern	5,082	9.12.39	ps2,353,000	+ ps151,000	24	ps46,187,000	ps47.134,000	— ps 947,000	Ord. Stk.	17 5/16	8 1/2	8	Nil
	Buenos Ayres Western	1,930	9.12.39	ps. 882.000	+ ps 8,000	24	ps16,693,000	ps15,491,000	+ ps1,202,000	,,	12 3/4	5	7	Nil
	Central Argentine	3,700	9.12.39	ps1,568,650	— ps125,950	24	ps43,223,750	ps38,975,800	+ ps 4,247,950	,,	13 4	5 5/4	7	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	6	2 1/2	3 1/2	Nil
	Cent. Uruguay of M. Video	972	2.12.39	26,375	+ 4,870	23	398,833	399,604	— 771	Ord. Stk.	3	1 1/4	2 1/2	Nil
	Costa Rica	188	June 1939	25.240	— 6,129	52	270,756	314,399	— 43,643	Stk.	28	22 1/2	22 1/2	87/8
	Dorada	70	Nov. 1939	13.700	— 600	48	150,400	178,100	— 27,700	1 Mt. Db.	105 1/4	104	102 1/2 §	57/8
	Entre Rios	810	9.12.39	ps. 238,300	+ ps2,400	24	ps. 5,843,000	ps5,896,700	— ps.53,700	Ord. Stk.	7 1/4	3 1/2	4	Nil
	Great Western of Brazil	1,016	9.12.39	14,700	+ 900	49	438,600	380,600	+ 58,000	Ord. Sh.	3/-	1/-	5/16	Nil
	International of Cl. Amer.	794	Oct. 1939	$450.759	+ $59,932	43	$4,937,141	$4,580,780	+ $356,361	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	6d.	6d.	1/2	Nil
	La Guaira & Caracas	22 3/4	Nov. 1939	7,055	+ 3,060	48	67.780	57,105	+ 10,675	Stk.	8	6 1/2	7 1/2	Nil
	Leopoldina	1,918	9.12.39	23,407	— 725	49	1,045,090	1,061,802	— 16,712	Ord. Stk.	4	1	2 1/2	Nil
	Mexican	483	14.11.39	$283,209	+ $17,500	19	$5.169,500	$5,156,300	+ $13,200	,,	1/4	1/16	1/8	Nil
	Midland of Uruguay	319	Oct. 1939	8.389	— 921	18	34,490	34,366	+ 124	,,	7/8	1/2	1/2	Nil
	Nitrate	386	15.12.39	8,706	+ 4,229	50	119.126	137,283	— 18.157	Ord. Sh.	52/9	19 1/6	15 1/4	7 1/8
	Paraguay Central	274	9.12.39	$4,992,000	+ $184,000	24	$75,925,000	$72,891,000	+ $3,034,000	Pr. Li. Stk.	60	55 1/2	40	15
	Peruvian Corporation	1,059	Nov. 1939	61.795	— 536	22	316.494	340.673	— 24 179	Pref.	5 3/4	1 3/4	2 1/2	Nil
	Salvador	100	18.11.39	£12,589	+ £214	20	£199,896	£239,164	— £39.268	Pr. Li. Db.	23	20	15	Nil
	San Paulo	153 1/2	3.12.39	32.917	+ 2,312	48	1,508,504	1,539,845	— 31,341	Ord. Stk.	64	28	38	5 1/4
	Taltal	160	Oct. 1939	3,360	— 525	17	7,785	11.785	— 4.000	Ord. Sh.	1 5/16	1	5/8	8
	United of Havana	1,353	9.12.39	14,396	+ 2,012	24	397,140	367,588	+ 29,552	Ord. Stk.	3 5/8	1/2	1	Nil
	Uruguay Northern	73	Oct. 1939	962	— 158	18	3,634	3,899	— 265	Deb. Stk.	2	1	2	Nil
Canada	Canadian National	23,691	7.12.39	924,632	+ 219.606	49	37,879,405	34,116,560	+ 3,762,845	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	72	60	73	5 1/2
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	104	90	98 1/2	4 1/16
	Canadian Pacific	17,171	7.12.39	664,800	+ 78,000	49	28,174,600	26,649,000	+ 1,525,600	Ord. Stk.	8 7/16	4 1/4	7	Nil
India	Assam Bengal	1,329	20.11.39	47,310	+ 535	32	978,293	938,741	+ 39,552	Ord. Stk.	8 1 1/2	70	63 1/2	4 5/4
	Barsi Light	202	10.11.39	2,355	— 3,712	30	69,285	90,180	— 20,895	Ord. Sh.	60 1/2	54 1/4	45	8 7/8
	Bengal & North Western	2,096	20.11.39	65,412	— 10,063	8	332,649	377,760	— 45,111	Ord. Stk.	311	278	228	7 7/8
	Bengal Dooars & Extension	161	30.11.39	5,372	+ 288	34	96,312	103,760	— 7,448	,,	89	83	87 1/2	7 7/16
	Bengal-Nagpur	3,267	20.11.39	189.525	— 4,780	32	4,907,205	4,355,442	+ 551,763	,,	9 5 1/2	90	83 1/2	4 13/16
	Bombay, Baroda & Cl. India	2,986	10.12.39	301.725	+ 47,400	36	6,004,950	5,952,000	+ 52.950	,,	112 7/16	95	99 1/2	6
	Madras & Southern Mahratta	2,967	30.11.39	159,525	+ 16,852	34	3,715,405	3,621,699	+ 93,706	,,	108	97	99 1/2	7 1/2
	Rohilkund & Kumaon	571	20.11.39	12,725	— 233	8	63.721	64 947	— 1,226	,,	308	285	235	7 11/16
	South Indian	2,531 3/4	20.11.39	81,602	— 20,632	32	2,604,882	2,639,897	— 35,016	,,	104	101	87 1/2 §	5 11/16
Various	Beira	204	Sept. 1939	83,772	—	52	971,039	—	—	—	—	—	—	—
	Egyptian Delta	623	10.8.39	5,875	+ 486	19	67.548	65,905	+ 1,643	Prf. Sh.		5/6	5/4	Nil
	Kenya & Uganda	1,625	May 1939	205,557	— 11,295	21	1,220,870	1,309,332	— 88,462	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	49	41	49	7 1/8
	Midland of W. Australia	277	Sept. 1939	13.513	— 3,516	13	36.618	44,686	— 8,068	Inc. Deb.	93 3/4	89	88	4 9/16
	Nigerian	1,900	28.10.39	23,695	— 4,758	31	874.277	922,770	— 48,493	—	—	—	—	—
	Rhodesia	2,442 3/4	Sept. 1939	400 529	—	52	4,413,769	—	—	—	—	—	—	—
	South Africa	3,284	25.11.39	640,775	+ 16,340	35	22,197,873	21,188,143	+ 1,009,730	—	—	—	—	—
	Victoria	4,774	Aug., 1939	698,267	— 64,636	9	1,383,157	1,479,248	— 96.091	—	—	—	—	—

NOTE. Yields are based on the approximate current prices and are within a fraction of 1/16
Argentine traffics are now given in pesos. † Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend